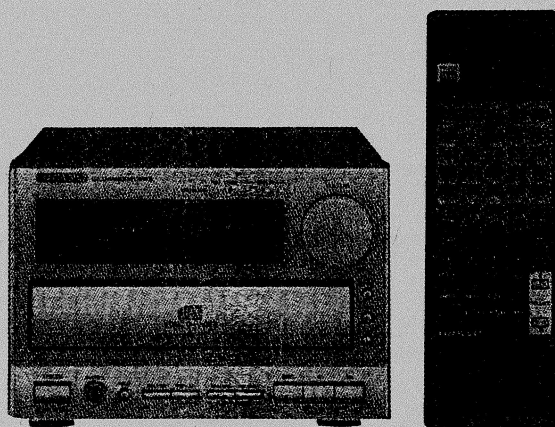


ONKYO® SERVICE MANUAL

CD CHANGER RECEIVER MODEL CHR-185



Black and Silver models

UP/UPT	230V AC, 50Hz
UDT	120V AC, 60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK Δ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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SPECIFICATIONS

AMP SECTION

Power Output:	2 x 20 watts at 4 ohms 1 kHz DIN 2 x 17 watts at 6 ohms 1 kHz DIN 2 x 15 watts at 8 ohms 1 kHz DIN 2 x 15 watts min. RMS at 8 ohms 1 kHz no more than 0.2 % THD
Dynamic Power:	2 x 24 watts at 4 ohms 2 x 18 watts at 8 ohms 0.2 % at rated power
Total Harmonic Distortion:	0.2 % at rated power
IM Distortion:	0.2 % at rated power
Damping Factor:	40 at 8 ohms
Sensitivity and Impedance:	TAPE / MD PLAY : 150 mV, 50 kohms LINE IN : 150 mV, 50 kohms
Frequency Response:	10 to 50,000 Hz : +0 / -3dB
Tone Control:	Super BASS : + 9.5 dB at 55 Hz BASS : ± 10 dB at 100 Hz TREBLE : ± 10 dB at 10,000 Hz TAPE : 100 dB (IHF A)
Single-to-Noise Ratio:	~∞ dB
Muting	

FM Tuner section

Tuning Range:	87.50 to 108.00 MHz (50 kHz steps)
Usable Sensitivity:	Mono 12.8 dBf, 1.2 µV (75 ohms IHF) 1.0 µV (75 ohms DIN) Stereo 18.0 dBf, 2.2 µV (75 ohms IHF) 25.0 µV (75 ohms DIN)
50 dB Quieting	Mono 18.8 dBf, 2.4 µV (75 ohms)
Sensitivity:	Stereo 38.8 dBf, 24.0 µV (75 ohms)
Capture Ratio:	2.0 dB
Image Rejection Ratio:	85 dB
IF Rejection Ratio:	90 dB
Signal-to-Noise	Mono 73 dB, IHF
Ratio:	Stereo 67 dB, IHF
Selectivity:	50 dB DIN (+/- 300 kHz at 40 kHz devi.)
Harmonic Distortion:	Mono 1.0 % Stereo 1.5 %
Frequency Response:	30 to 15,000 Hz (+/- 1.5 dB)
Stereo Separation:	35 dB at 1,000 Hz 25 dB at 100 to 10,000 Hz
Stereo Threshold:	FM : 17.2 dBf, 2.0 µV (75 ohms)

CAUTION ON REPLACEMENT OF OPTICAL PICK UP

The laser diode in the optical pickup block is so sensitive to static electricity, surge current and etc, that the components are liable to be broken down or its reliability remarkably deteriorated.

PRECAUTIONS

1. Ground for the work-desk.

Place a conductive sheet such as a sheet of copper (witch impedance lower than 10MΩ) on the work-desk and place the set on the conductive sheet so that the chassis.

2. Grounding for the test equipment and tools.

Test equipment and toolings should be grounded in order that their ground level is the same the ground of the power source.

CD SECTION

Signal Readout System:	Optical non-contact
Reading Rotation:	About 500 – 200 r.p.m. (constant linear velocity)
Linear Velocity:	1.2 – 1.4 m / s
Error Correction System:	Cross Interleave Read Solomon code
D / A Converter:	1 bit
Digital Filter:	352.8 kHz 8 times over sampling
Number of Channels:	2 (stereo)
Frequency Response:	5 Hz – 20 kHz

General

Power Supply:	AC 230 V, 50 Hz AC 120 V, 60 Hz
Power Consumption:	55 W
Dimensions:	185 W x 131 H x 378 D mm (7-5/16" x 5-3/16" x 14-7/8")
Weight:	5.0 kg (11.0 lbs)

Specifications and features are subject to change without notice.

During repair, carefully take the following precautions.
(The following precautions are included in the service parts.)

3. Grounding for the human body.

Be sure to put on a wrist-strap for grounding whose other end is grounded.
Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.

4. Select a soldering iron that permits no leakage and have the tip of the iron well- grounded.

5. Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

WARNING !!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYES TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

LASER WARNING LABELS

There labels are located on the mechanism.

1. Warning lable

This label is located on the chassis.

Ⓐ

DANGER —INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.
CAUTION —HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED.
ATTENTION —RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT AVEC L' ECLenchement DE SECURITE ANNULE.

Ⓒ

VARNING
OSYMLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRÄKTA EJ STRÅLEN.

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALLTTINA NÄKYMÄTTÖMÄLLE LASERSÄTELYLLE. ÄLÄ KATSO SÄTEESEEN.

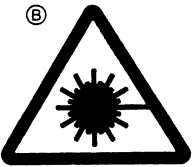
ADVARSEL: USYMLIG LASERSTRÅLNING VED ÅBNING, NÄR SIKKERHEDSAF-BRYDER ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

ADVARSEL
USYMLIG LASERSTRÅLNING NÄR DEKSEL ÖPPNES OG SIKKERHEDSLÅS BRYTES. UNDGÅ EKSPONERING FOR STRÅLEN.

Ⓐ : Danger label
Ⓒ : Only 230V model

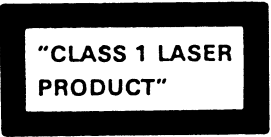
Laser Diode Properties

- Material: GaAlAs
 - Wavelength: 760-800nm
 - Emission Duration: continuous
 - Laser output: max. 0.5mW*
- * This output is the value measure at a distance about 1.8mm from the objective lens surface on the Optical pick-up Block.



2. Class 1 label

This label is located on the left side of top cover.



LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

ADVARSEL

Denna mækning er anbragt på apparatets højre side og indikerer, at apparatet arbejder med laserstråler af klasse 1, hvilket betyder, at der anvendes laserstråler af svageste klasse, og at man ikke på apparatets yderside kan blive udsat for utilsladelig kraftig stråling.

APPARATET BØR KUN ÅBNES AF FAGFOLK MED SE RLIGT KENDSKAB TIL APPARATER MED LASERSTRÅLER!

Indvendigt i apparatet er anbragt den her gavnlige advarselmærkning, som advarer imod at foretage sådanne indgreb i apparatet, at man kan komme til at udsætte sig for laserstråling.

VAROITUS! LAITTEEN KAYTTAMINEN MUULLA KUIN TASSA KAYTTOOHJEESSA MAINTULLA TAVALLA SAATTAA ALTISTAA KAYTTAJAN TURVALLISUUSLUOKAN 1.YLITTAVALLE NAKYMÄTTÖMÄLLE LASERSÄTELYLLE.

SERVICE PROCEDURES

1. Replacing the fuses

 This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.

 Ce symbole indique que le fusible utilise est a rapide. Pour une protection permanente, n'utiliser que des fusibles de meme type. Ce dernier est indique la qu le present symbol est appose.

Circuit	No. Part	No.	Description
F901	252083		0.4A-SE-EAWK <P,PT>
F901	252147		1.6A-TSC <DT>
NOTE:	<P>:		230V model only
	<DT>:		Taiwanese model only
	<PT>:		Asian model only

2. To Initialize the unit

This device employs a microprocessor to perform various functions and operations. If interference generated by an external power supply, radio wave, or other electrical source results in accident which causes the specified operations and functions to operate abnormally.

To perform a result, please follow the procedure below.

1. Press and hold down the **DOWN (▼)** button, then press the **DISC-3 (OPEN/CLOSE)** button.
2. Press the **POWER** button.
3. After "clear" is displayed, the prest memory and each mode stored in the memory, are initialized and will return to the factory settings.

CAUTION ON REPLACEMENT OF OPTICAL PICKUP

The laser diode in the optical pickup block is so sensitive to static electricity, surge current and etc. that the components are liable to be broken down or its reliability remarkably deteriorated.

During repair, carefully take the following precautions.

1. When replacing the CD mechanism assembly, first short the pattern on the CD mechanism pc board and remove the connector (P301).
2. When replacing the optical pickup, first short the LD terminals and remove the connector. Also, when attaching the new optical pickup, after attaching the connector, unsolder the LD terminals.
3. Do not touch the optical object lens with the hands.

3. Safety-check out

After correcting the original service problem, perform the following safety check before releasing the set to the customer. Connect the insulating-resistance tester between the plug of power supply cord and the screw on the back panel.

Specifications: More than 10 MΩ at 500V.

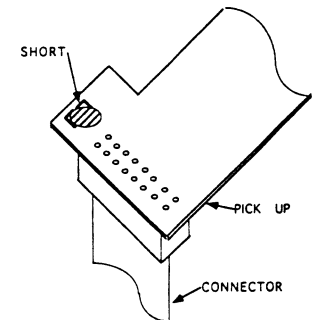
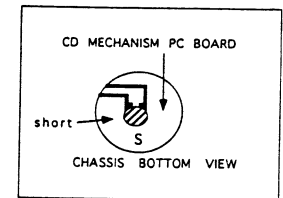
4. Memory preservation

This unit does not require memory preservation batteries.

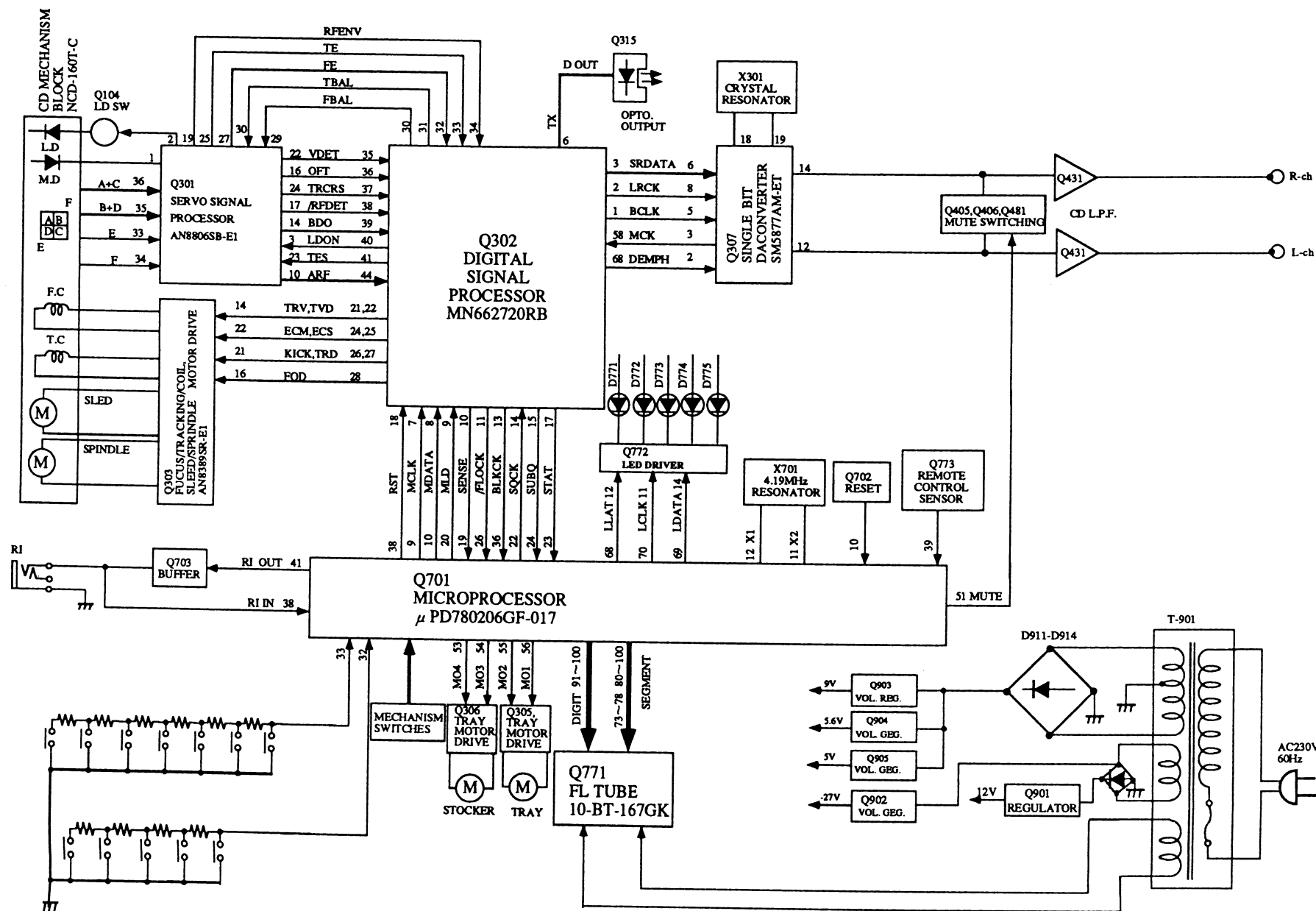
A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged.

The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory, the power switch must be turned on and off a few times each month the keep the back-up system operative.

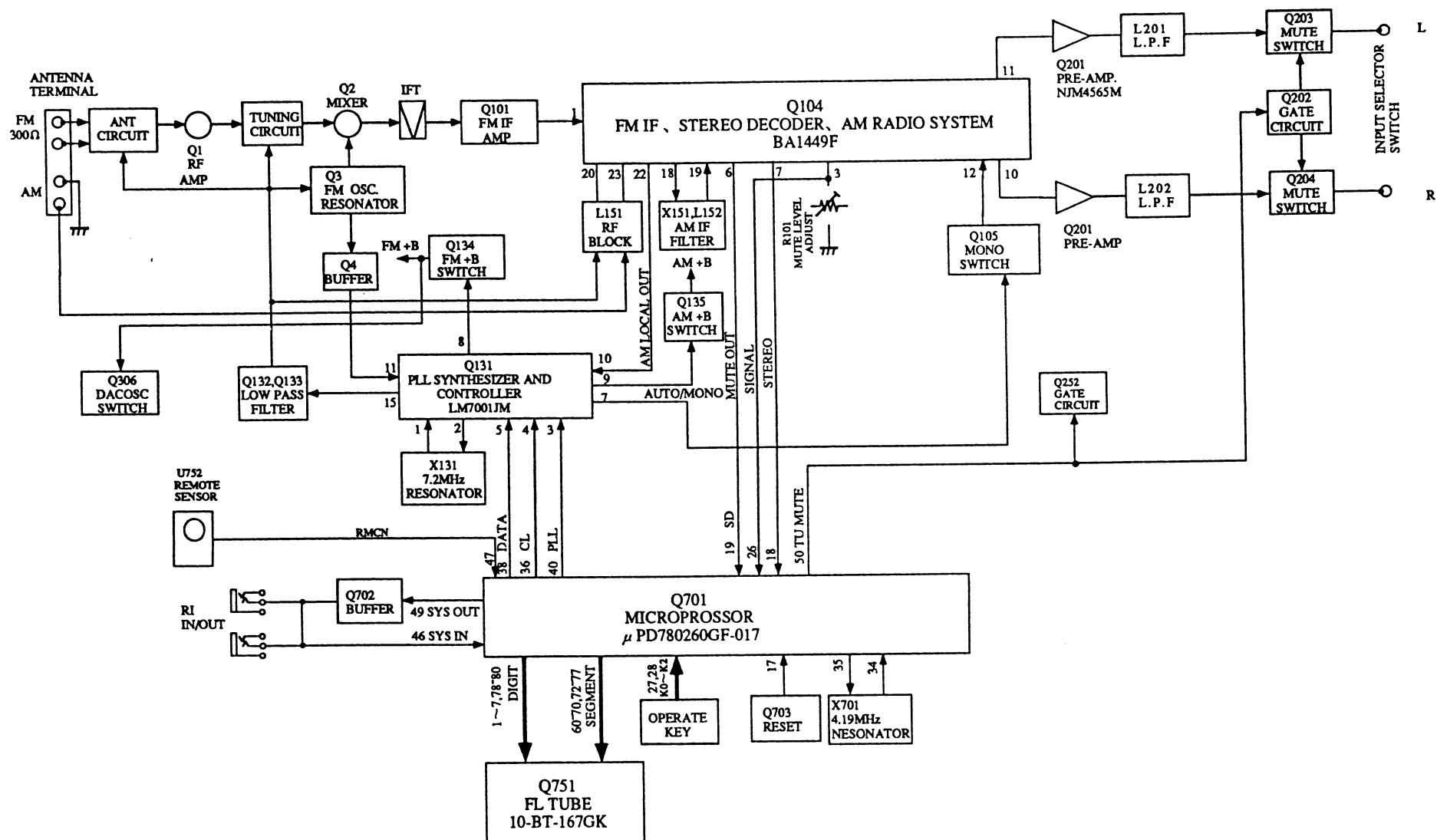
The period of the time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shortened when the unit is exposed to very high humidity or used in an area with an extremely humid climate.



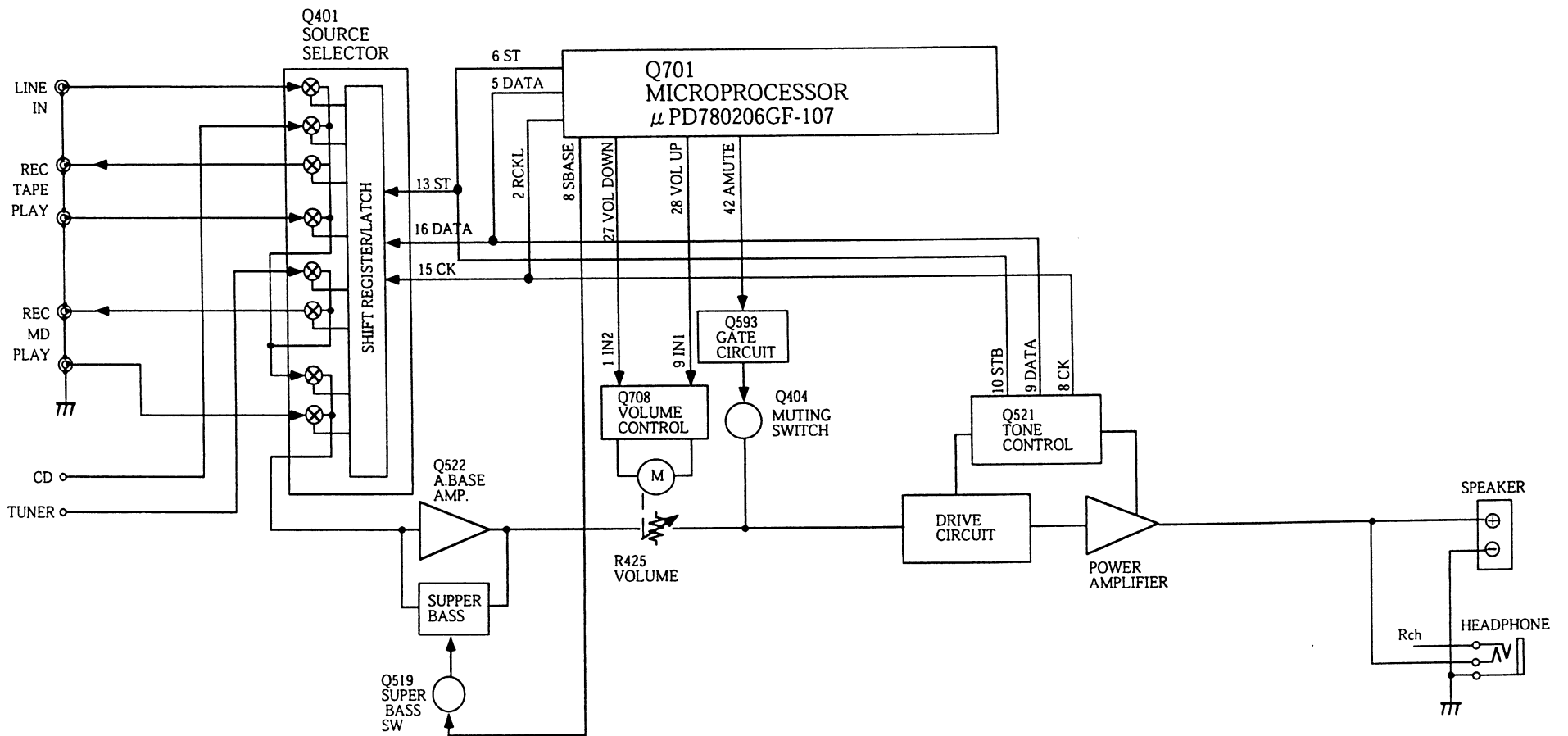
BLOCK DIAGRAMS (CD SECTION)



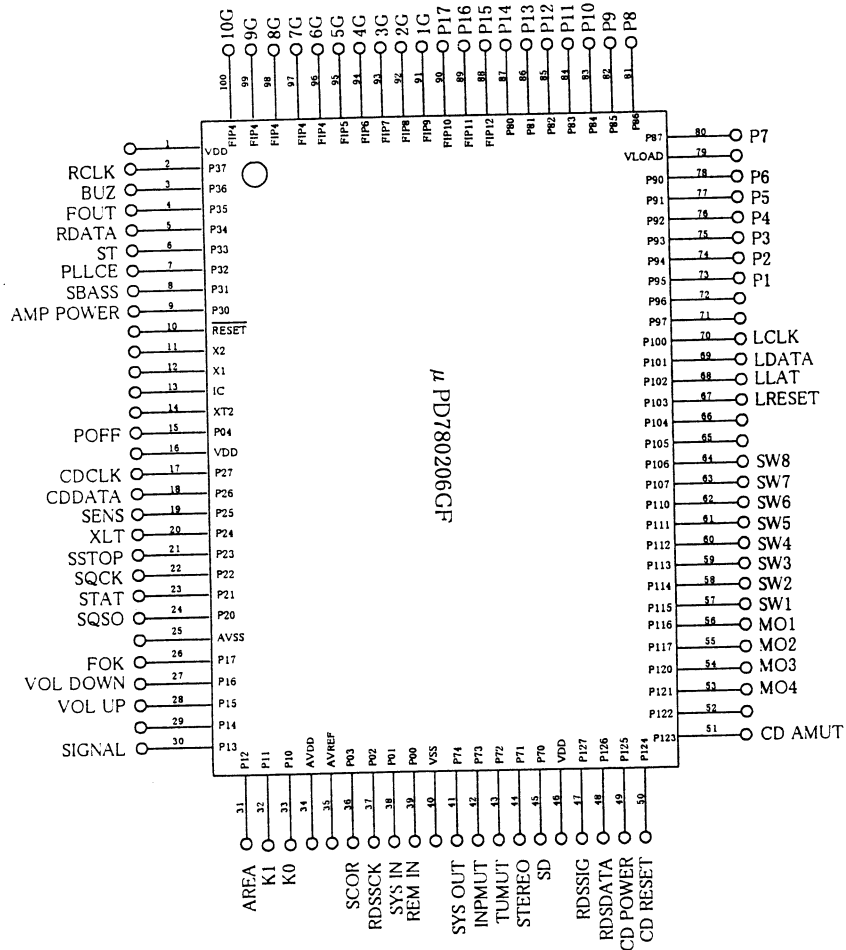
BLOCK DIAGRAMS (TUNER SECTION)



BLOCK DIAGRAMS (AMP SECTION)



μPD780206GF-017(Microprocessor)



MICROPROCESSOR-TERMINAL DESCRIPTIONS (1 / 3)

PIN NO.	SYMBOL	FUNCTION	DESCRIPTION															
1	VDD	VDD	Power supply terminal. (+5V)															
2	P37	RCLK	Connect to CK output terminal of TC9164AN function switch, CL terminal of PLL LM7001 and CK terminal of TC9184P of electronics volume) output terminals.															
3	P36	BUZ	Buzzer output terminal.															
4	P35	FOUT	Clock monitor output terminal. (at all light mode: output)															
5	P34	RDATA	Connect to DATA terminal of TC9164AN function switch, DATA terminal of PLL LM7001 and DATA terminal of TC9184P electronics volume output terminal.															
6	P33	ST	Connect to TC9164AN of function switch, TC9184P STB of electronics volume output terminal.															
7	P32	PLLCE	Connect to CE terminal of PLL LM7001 output terminal.															
8	P31	SBASS	Super bass control output terminal. (at SBASS ON : "H")															
9	P30	AMP POWER	Power supply (POWER) control output terminal. (at POWER ON : "H")															
10	RESET	RESET	System reset input terminal. (at active: "L")															
11	X2	X2	Main system clock oscillator crystal connect terminal.															
12	X1	X1	Connect to 4.19MHz ceramic oscillator.															
13	IC	IC	IC terminal. connect to GND.															
14	XT2	XT	Sub system clock oscillator crystal connect terminal. (not used)															
15	P04	POFF	Power down reset sensor input terminal. (at power down : "2")															
16	VDD	VDD	Power supply (+5V) terminal.															
17	P27	CDCLK	Connect to MLOK terminal of signal processor IC MN662724RPE.															
18	P26	XLT	Connect to MLD terminal of signal processor IC MN662724RPE.															
19	P25	CDDATA	Connect to MDATA terminal of signal processor IC MN662724RPE.															
20	P24	STAT	Connect to STAT terminal of signal processor IC MN662724RPE.															
21	P23	SSTOP	Pick-up inner side sensor of mechanism switch input terminal.															
22	P22	SQCK	Connect to SQCK terminal of signal processor IC MN662724RPE.															
23	P21	SENS	Connect to SENSE terminal of signal processor IC MN662724RPE.															
24	P20	SQSO	Connect to SQBQ terminal of signal processor IC MN662724RPE.															
25	AVSS	AVSS	A/D convertor ground voltage terminal.															
26	P17	FOK	CD mechanism FOK output terminal. (at active: "H")															
27	P16	VOL DOWN	Volume up/down control output terminal. (at active : "H")															
28	P15	VOL UP	Volume up/down of Remote control code as bellow. <table><tr><td>operation</td><td>VOL UP output</td><td>VOL DOWN output</td></tr><tr><td>stop (brake)</td><td>H</td><td>H</td></tr><tr><td>VOLUME UP</td><td>H</td><td>L</td></tr><tr><td>VOLUME DOWN</td><td>L</td><td>H</td></tr><tr><td>POWER OFF</td><td>L</td><td>L</td></tr></table> POWER ON	operation	VOL UP output	VOL DOWN output	stop (brake)	H	H	VOLUME UP	H	L	VOLUME DOWN	L	H	POWER OFF	L	L
operation	VOL UP output	VOL DOWN output																
stop (brake)	H	H																
VOLUME UP	H	L																
VOLUME DOWN	L	H																
POWER OFF	L	L																
29	P14	not used	not used (at normal: "L")															
30	P13	SIGNAL	auto memory signal level input terminal. analog voltage input (8 step)															
31	P12	AREA	Initializing setting terminal for the frequency range. (BANDO, BAND1, AK10K)															
32	P11	K1	Key input terminal.															
33	P10	K0	Key input terminal.															
34	AVDD	AVDD	A/D convertor analog power supply (+5) terminal.															
35	AVREF	AVREF	A/D convertor standard voltage input terminal.															
36	P03	SCOR	Connect to BLKCK terminal of signal processor IC MN662724RPE. subcode sensor															
37	P02	RDSSCK	Connect to CLK out terminal of RDS decoder IC μPC1346CS.															

MICROPROCESSOR-TERMINAL DESCRIPTIONS (2 / 3)

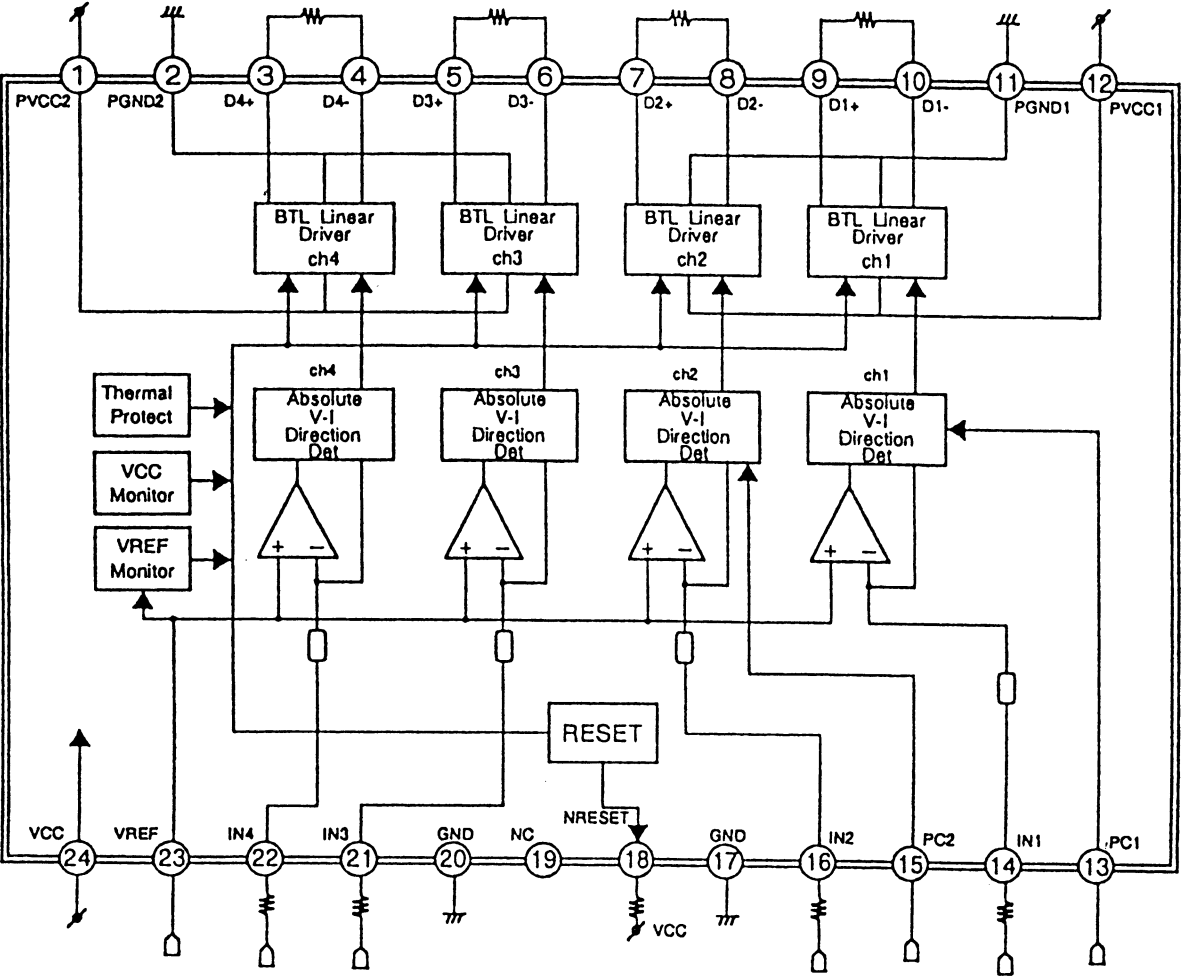
PIN NO.	SYMBOL	FUNCTION	DESCRIPTION
38	P01	SYSIN	System code input terminal. (at active: "H")
39	P00	REMIN	Remote control signal input terminal. (at active: "L")
40	VSS	VSS	GND
41	P74	SYSOUT	System code output terminal. (at active: "L")
42	P73	INPMUT	Analog muting output terminal. (at active: "H")
43	P72	TUMUT	Tuner muting output terminal. (at active: "H")
44	P71	STEREO	Streo signal detector input terminal. (at stereo: "L")
45	P70	SD	Station sensor input terminal. (at station: "L")
46	VDD	VDD	Power supply (+5V) terminal.
47	P127	RDSSIG	RDS station detector input terminal. (at RDS station: "L")
48	P126	RDSDATA	Connect to DATA output terminal of RDS decoder IC uPC1346CS.
49	P125	CD POWER	CD mechanism power output terminal. (at active: "H")
50	P124	CD RESET	CD mechanism reset output terminal. (at active: "H")
51	P123	CD AMUT	CD analog muting output terminal. (at active: "H")
52	P122	not used	not used (at normal: "L")
53	P121	M04	CD mechanism motor output terminal.
54	P120	M03	
55	P117	M02	
56	P116	M01	
57	P115	SW1	
58	P114	SW2	CD mechanism switch input terminal.
59	P113	SW3	
60	P112	SW4	
61	P111	SW5	
62	P110	SW6	
63	P107	SW7	
64	P106	SW8	
65	P105	not used	not used (at normal: "L")
66	P104	not used	not used (at normal: "L")
67	P103	LRESET	LED output terminal. Connect to reset terminal of port expend IC 74HC595.
68	P102	LLAT	LED output terminal. Connect to latch clock terminal of port expend IC 74HC595.
69	P101	LDATA	LED output terminal. Connect to D terminal of port expend IC 74HC595.
70	P100	LCLK	LED output terminal. Connect to SHIFT CLOCK terminal of port expend IC 74HC595.
71	P97	not used	not used. (at normal: "L")
72	P96	not used	not used. (at normal: "L")
73	P95	P1	Segment output terminal. (at active: "H")
74	P94	P2	
75	P93	P3	
76	P92	P4	
77	P91	P5	
78	P90	P6	
79	VLOAD	VLOAD	FIP controller/driver pull down resistor connect terminal.
80	P87	P7	Segment output terminal. (at active: "H")
81	P86	P8	
82	P85	P9	
83	P84	P10	
84	P83	P11	
85	P82	P12	

MICROPROCESSOR-TERMINAL DESCRIPTIONS (3 / 3)

PIN NO.	SYMBOL	FUNCTION	DESCRIPTION
86	P81	P13	Segment output terminal. (at active: "H")
87	P80	P14	
88	FIP12	P15	
89	FIP11	P16	
90	FIP10	P17	Grid output terminal. (at active: "H")
91	FIP9	1G	
92	FIP8	2G	
93	FIP7	4G	
94	FIP6	5G	
95	FIP5	6G	
96	FIP4	7G	
97	FIP3	8G	
98	FIP2	9G	
99	FIP1	10G	
100	FIP0	3G	

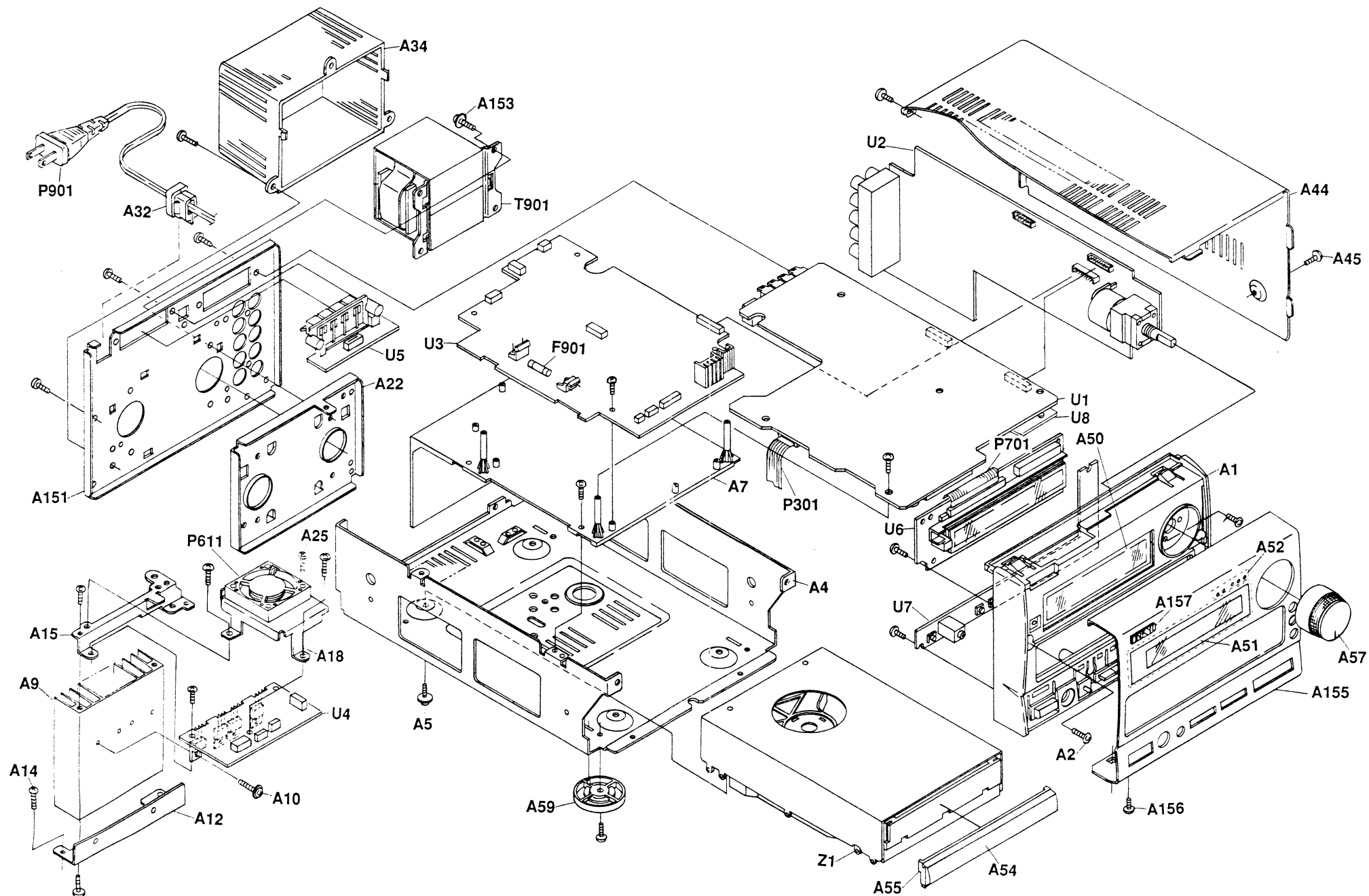
IC BLOCK DIAGRAMS AND TERMINAL DESCRIPTIONS
AN8389SR

- 12 -



NO.	I/O	DESCRIPTION
1		Driver power supply terminal 2.
2		Driver GND terminal 2.
3	O	Motor driver 4 forward output terminal.
4	O	Motor driver 4 revers turn output terminal.
5	O	Motor driver 3 forward output terminal.
6	O	Motor driver 3 reverse output terminal.
7	O	Motor driver 2 forward output terminal.
8	O	Motor driver 2 reverse output terminal.
9	O	Motor driver 1 forward output terminal.
10	O	Motor driver 1 reverse output terminal.
11		Driver power terminal 1.
12		Driver power terminal 1.
13	I	PC1 (power cut) input terminal.
14	I	Motor driver 1 input terminal.
15	I	PC2 (power cut) input terminal.
16	I	Motor driver 2 input terminal.
17		GND
18	O	Reset output terminal.
19		
20		GND
21	I	Motor driver 3 input terminal.
22	I	Motor driver 4 input terminal.
23	I	VREF input terminal.
24		Power terminal

EXPLODED VIEW



EXPLODED VIEW PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
A1	27110982A	Front panel <S>
	27110983A	Front panel
A2	838130088	3TTB+8B, Self-tapping screw
A4	27100326	Chassis
A5	831430088	3TTW+8B(BC), Self-tapping screw
A6	28140835	Cushion
A7	27190997	Holder (MEC)
A9	27160382	Radiation
A10	801433	3SMS8W.SW+14B(BC), Self-tapping screw
A12	27141675	Bracket (HD)
A14	834430068	3TTS+6B(BC), Self-tapping screw
A15	27141676	Bracket (HU)
A18	27141677	Bracket (FU)
A22	27130787A	Bracket (PT)
A25	838430107	3TTB+10S(BC), Self-tapping screw
A32	27300750	△ Cord bushing #2271
A34	28184677	Cover (PT)
A42	27262600	Plate (S)
A44	28184678	Top cover <S>
	28184679	Top cover
A45	838230088	3TTB+8B(NI), Self-tapping screw
A50	28133362	Back plate <S>
	28133363	Back plate
A51	28191773	Clear plate
A52	28198860	Facet
A54	27301918	Door <S>
	27301919	Door
A55	27301920	Door (BASE) <S>
	27301921	Door (BASE)
A57	28325484	Knob (VOL) <S>
	28325491	Knob (VOL)
A59	27175252-1BY	Leg AS
A151	27122316	Rear panel
A153	830440089	4TTC+8C(BC), Self-tapping screw
A155	27211899A	Front panel <S>
	27211903A	Front panel
A156	801525	3TTB+8B(BC), Self-tapping screw
A157	28135241Y	Badge
A158	29361731A	Label (ALL)
Z2	838426088	2.6TTB+8B(BC), Self-tapping screw
Q557,Q558	2202063 or	2SC4511-O or
	2202064 or	2SC4511-Y or
	2202066	2SC4511-P, Transistor
Q559,Q560	2202053 or	2SA1725-O or
	2202054 or	2SA1725-Y or
	2202056	2SA1725-P, Transistor
P301	2042163022SON	NCFC2-163022, Flexible flat cabal
P302	2002391220	NSAS-12P0593, Socket AS
P303	2001191830	NSAS-18P0590, Socket AS
P304	2001190830	NSAS-8P0591, Socket AS
P611	24502283	Fan
P401	25045300 or	NPJ-6PDBL159 or
	25045458	NPJ-6PDBL279, Jack
P402	25045303 or	NPJ-4PDBL162 or
	25045460	NPJ-4PDBL280, Jack
P701	2047351012	NCFC7-351012, Flexible flat cabal
T901	2301265A	△ NPT-1297P, Power transformer <P,PT>
	2301264A	△ NPT-1297D, Power transformer <DT>
T902	230915	△ RBD25HA-00, Core <PT>
P901	253193HIT	△ AS-CEE, AC Cord <P,PT>
	253191HIT	△ AS-UC-7#18, (SPT-1), AC Cord <DT>
F901	252083	△ 0.4A-SE-EAWK, Fuse <P,PT>
	252147	△ 1.6A-TSC, Fuse <DT>
F901b	29361919	T400mAL250V, Special label <P>
Z1	24800016	CD mech. ass'y
U1	1H354589-1B	NAAR-5989-1B, Tuner circuit pc board ass'y
U2	1H354590-1B	NAAF-5990-1B, Pre-amp. circuit pc board ass'y <P,PT>
U2	1H354590-1C	NAAF-5990-1C, Pre-amp. circuit pc board ass'y <DT>
U3	1H354591-1B	NAAF-5991-1B, Power supply pc board ass'y <P,PT>
U3	1H354591-1C	NAAF-5991-1C, Power supply pc board ass'y <DT>
U4	1H354592-1B	NAAF-5992-1B, Main amp. circuit pc board ass'y <P,PT>
U4	1H354592-1C	NAAF-5992-1C, Main amp. circuit pc board ass'y <DT>
U5	1H354593-1B	NAETC-5993-1B, Speaker terminal pc board ass'y <P,PT>
U5	1H354593-1C	NAETC-5993-1C, Speaker terminal pc board ass'y <DT>
U6	1H354594-1B	NADIS-5994-1B, Display circuit pc board ass'y <P,PT>
U6	1H354594-1C	NADIS-5994-1C, Display circuit pc board ass'y <DT>
U7	1H354595-1B	NASW-5995-1B, Switch circuit pc board ass'y <P,PT>
U7	1H354595-1C	NASW-5995-1C, Switch circuit pc board ass'y <DT>
U8	1H354536-1	NAETC-6136-1, Micon pc board ass'y

NOTE: <S> Silver model
 Black model
 <P> 230V model only
 <DT> Taiwan model only
 <PT> Asian model only

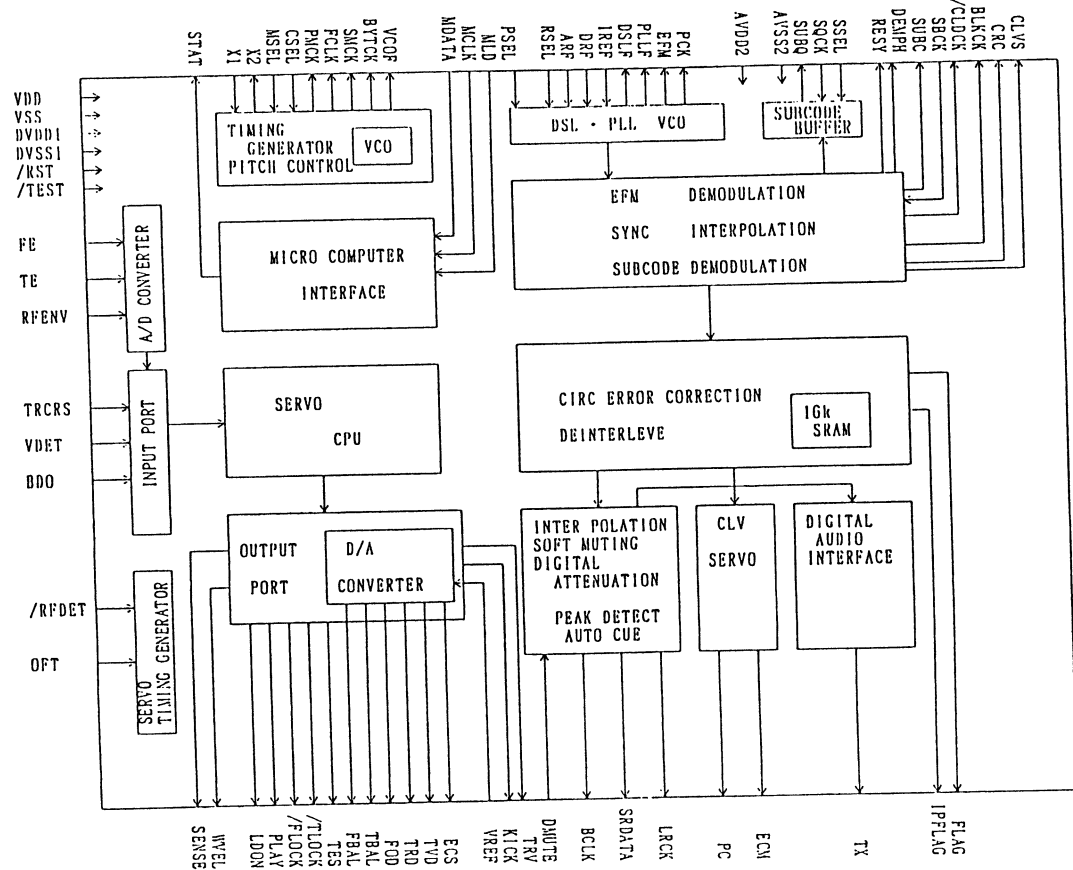
NOTE: THE COMPONENTS IDENTIFIED BY MARK

△ ARE CRITICAL FOR RISK OF FIRE AND
 ELECTRIC SHOCK. REPLACE ONLY WITH
 PART NUMBER SPECIFIED.

IC BLOCK DIAGRAMS AND TERMINAL DESCRIPTIONS

MN662720RB

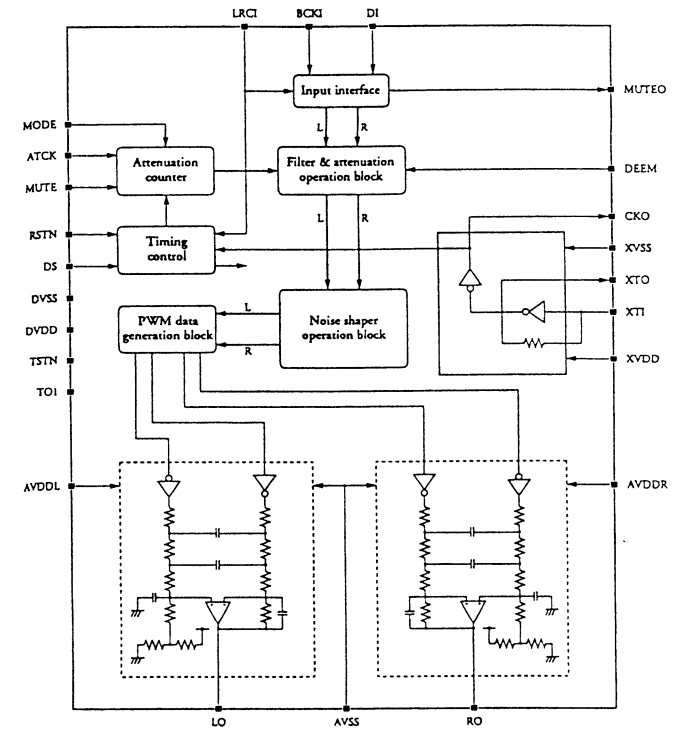
HR-185



NO.	I/O	Description	NO.	I/O	Description
1	BCLK	O Bit clock output for SRDATA	41	TES	O Tracking error shunt signal input
2	LRCK	O L,R Detection signal output	42	PLAY	O Play signal output
3	SRDATA	O Serial data output	43	WVEL	O Hi-speed status signal output
4	DVDD1	I Power for digital circuit	44	ARF	I RF signal input
5	DVSS1	I GND for digital circuit	45	IREF	I Reference current input terminal
6	TX	O Digital audio interface output signal	46	DRF	I DSL bias terminal
7	MCLK	I Microprocessor command clock signal input	47	DSLF	I/O DSL loop filter terminal
8	MDATA	I Microprocessor command data input	48	PLLF	I/O PLL loop filter terminal
9	MLD	I Microprocessor command load signal output	49	VCOF	I/O VCO loop filter terminal
10	SENSE	O Sense signal input	50	AVDD2	I Power for analog circuit
11	/FLOCK	O Focus servo signal	51	AVSS2	I GND for analog circuit
12	/TLOCK	O Tracking servo signal	52	EFM	O EFM signal output
13	BLKCK	O Sub code block clock signal	53	PCK	O PLL extraction clock output
14	SQCK	I External clock input for sub code Q resistor	54	PDO	O Phase comparator signals output of EFM signal and PCK signal
15	SUBQ	O Sub code Q code output	55	SUBC	O Sub code serial output data output
16	DMUTE	I Muting input	56	SBCK	I Sub code serial output clock output
17	STAT	O Status signal	57	VSS	I GND for oscillation circuit
18	/RST	I Reset input	58	X1	I Crystal oscillation circuit input terminal
19	SMCK	O MSEL=H 8.4672MHz clock signal output MSEL=L 4.2336MHz clock signal output	59	X2	O Crystal oscillation circuit output terminal
20	PMCK	O 88.2kHz clock signal output	60	VDD	I Power for oscillation circuit
21	TRV	O Traverse enforcement output	61	BYTCK	O Bite clock output
22	TVD	O Traverse drive output	62	/CLDCK	O Sub code frame clock signal output
23	PC	O Spindle motor ON signal	63	FCLK	O Crystal frame clock output
24	ECM	O Spindle motor drive signal (forcement mode output)	64	IFLAG	O Interpolation flag output
25	ECS	O Spindle motor drive signal (servo error signal output)	65	FLAG	O Flag output
26	KICK	O Kick pulse output	66	CLVS	O Spindle servo phase synchronize signal output
27	TRD	O Tracking drive output	67	CRC	O Subcode CRC check output
28	FOD	O Focus drive output	68	DEMPH	O Deemphasise detection signal output
29	VREF	I Reference voltage for DA output	69	RESY	O SSEL = L FLAG6 output SSEL = H RESY output
30	FBAL	O Focus balance adjustment output	70	NC1	NC No connection terminal
31	TBAL	O Tracking balance adjustment output	71	/TEST	I Test terminal
32	FE	I Focus error signal input (analog input)	72	AVDD1	I Power for digital circuit
33	TE	I Tracking error signal input (analog input)	73	NC2	NC No connection terminal
34	RFENV	I RF envelope signal input	74	AVSS1	I GND for digital circuit
35	VDET	I Vibration detection signal input	75	NC3	NC No connection terminal
36	OFT	I Off track signal input	76	RSEL	I RF signal pole specified terminal
37	TRCRS	I Track cross signal input	77	CSEL	I Crystal oscillation frequency specified terminal
38	/RFDET	I RF detection signal input	78	PSEL	I Test terminal
39	BDO	I Dropout signal input	79	MSEL	I SMCK terminal
40	LDON	O Laser ON signal output	80	SSEL	I SUBQ terminal

MN662720RB

SM5877BM (DA Converter)



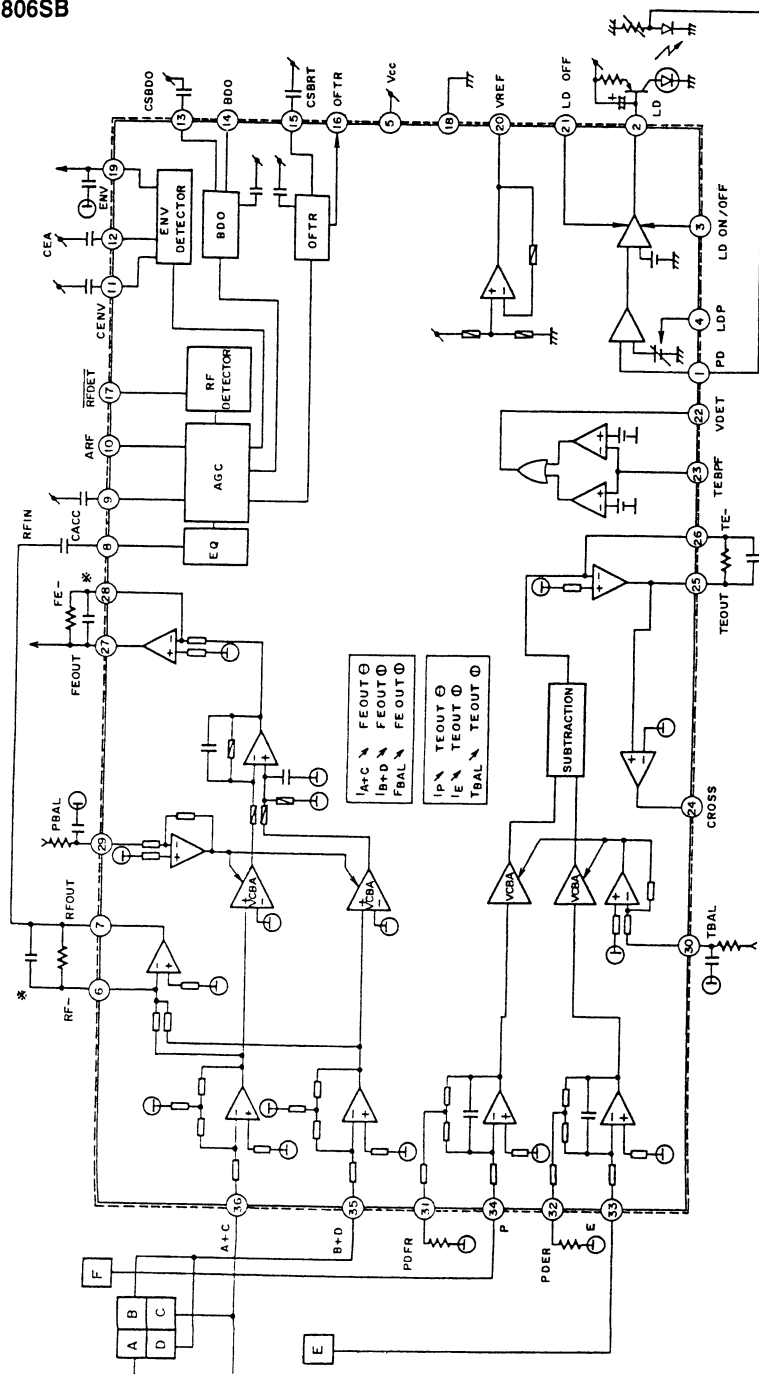
Pin No.	Symbol	I/O	Description
1	MUTE	Ip	MODE=H : Soft mute ON/OFF terminal. (at H: Mute) MODE=L : Attenuator level DOWN/UP terminal. (at H: DOWN)
2	DEEM	Ip	De-emphasis ON/OFF terminal. (at H: De-emphasis ON)
3	CKO	O	Clock output terminal. (16.9344MHz)
4	DVSS	-	Digital VSS terminal.
5	BCKI	Ip	Bit clock input terminal.
6	DI	Ip	Serial data input terminal.
7	DVDD	-	Digital supply terminal.
8	LRCI	Ip	Sampling rate clock (fs) input terminal. (at H: L ch, L: R ch)
9	TSTN	Ip	Test input terminal.
10	TOI	O	Test output terminal. (normal: L level)
11	AVDDL	-	Analogue supply terminal for left channel.
12	LO	O	Analogue signal output terminal for left channel.
13	AVSS	-	Analogue supply VSS terminal.
14	RO	O	Analogue signal output terminal for right channel.
15	AVDDR	-	Analogue supply VDD terminal for right channel.
16	MUTE0	O	Infinitely zero detector output.
17	XVDD	-	Supply terminal VDD for resonator system.
18	XTI	I	Crystal connection or external clock input terminal. (16.9344MHz)
19	XTO	O	Crystal connection terminal.
20	XVSS	-	Supply terminal VSS for resonator system.
21	DS	Ip	Playback speed select terminal. (at H: double speed)
22	RSTN	Ip	Reset terminal. (at L: reset)
23	MODE	Ip	Soft muting/Attenuator mode select terminal. (at H: soft muting mode)
24	ATCK	Ip	Attenuator level setting clock.

AN8806SB

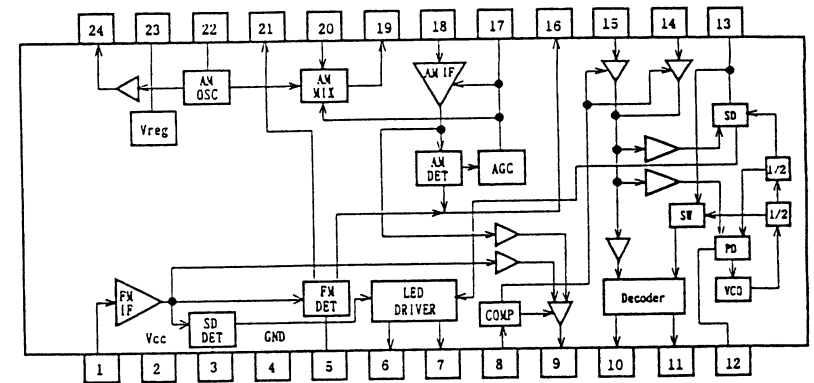
CHR-185

CHR-185

AN8806SB

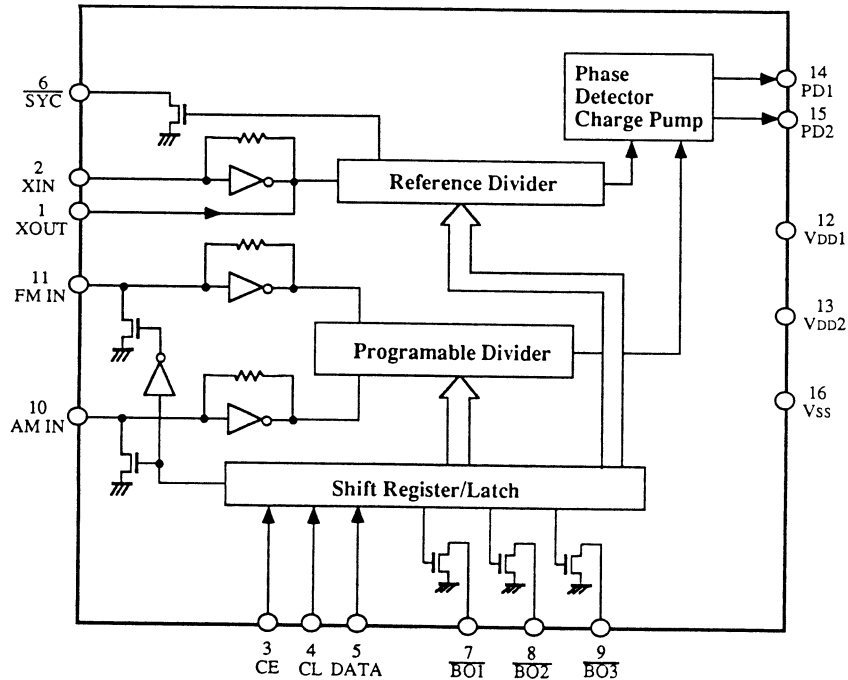


NO.	I/O	Description
1	I	APC Amp input terminal
2	O	APC Amp output terminal
3	O	APC ON/OFF control terminal
4		APC reference terminal
5		Power terminal
6	I	RF Amp reverse input terminal
7	O	RF Amp output terminal
8	I	AGC input terminal
9		AGC loop filter terminal
10	O	AGC output terminal
11		RF detector terminal
12		HPF-Amp terminal
13		RF dark side envelope detector terminal
14	O	BDO output terminal
15		RF light side envelope detector terminal
16	O	OFTR output terminal
17	O	RFDET output terminal
18		GND
19	O	3TENV output terminal
20	O	VREF output terminal
21	O	APC OFF control terminal
22	O	VDET output terminal
23	I	VDET input terminal
24	O	CROSS output terminal
25	O	TE.Amp output terminal
26	I	TE.Amp reverse input terminal
27	O	FE.Amp output terminal
28	I	FE.Amp reverse input terminal
29	O	F.BAL control terminal
30	O	T.BAL control terminal
31		I-V Amp convert resistor adjustment terminal
32		I-V Amp convert resistor adjustment terminal
33	I	I-V Amp input terminal
34	I	I-V Amp input terminal
35	I	I-V Amp input terminal
36	I	I-V Amp input terminal



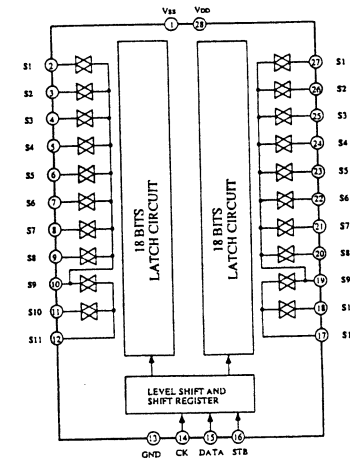
Pin No.	Descriptions
1	FM IF amplifier input pin
2	Power supply pin +5V
3	FM tuning level adjustment pin
4	Ground pin
5	FM discriminator pin. Connect the ceramic discriminator.
6	Tuning indicator output pin
7	Stereo indicator output pin
8	IF request pin. Output the FM signal more than 3.5V.
9	Muting detector pin. Muting turns on at the signal of more than 1.5V.
10	IF signal output pin
11	Right channel output pin
12	Left channel output pin
13	Connect the PLL filter.
14	AM/FM band selector pin. AM when this pin is connected to the ground.
15	AUTO/MONO selector pin. MONO when this pin is connected to the ground.
16	Pilot signal filter pin.
17	MPX input pin for FM signal
18	MPX input pin for AM signal
19	FM/AM detector output pin
20	AM AGC control pin
21	AM IF input pin
22	AM mixer output pin
23	AM antenna pin
24	FM band width adjustment pin.
25	Reference voltage pin
26	AM local oscillator pin
27	AM local oscillator output pin

LM7001JUM

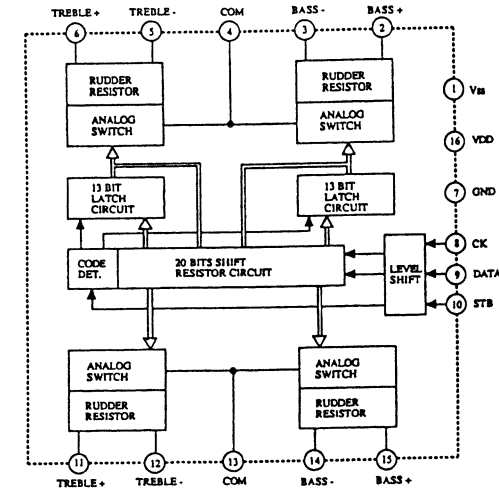


Pin No.	Terminal	Description
1	XOUT	Connect the 7.2MHz crystal resonator.
2	XIN	
3	CE	Chip enable terminal. Connect to the terminal CE of microprocessor.
4	CL	Serial clock input terminal. Connect to the terminal CLK of microprocessor.
5	DATA	Serial data input terminal. Connect to the terminal DATA of microprocessor.
6	SYN	Not used.
7	AUTO/MONO	Auto/Mono control terminal.
8	FM	Band selector output terminal. Low level at FM.
9	AM	Band selector output terminal. Low level at AM.
10	AMIN	AM local oscillator input terminal.
11	FMIN	FM local oscillator input terminal.
12	VDD1	Power source terminal for back-up.
13	VDD2	Power source terminal.
14	PD1	Phase comparator output terminal
15	PD2	Phase comparator output terminal
16	VSS	Ground terminal

TC9273N-007
(Analog Switch)

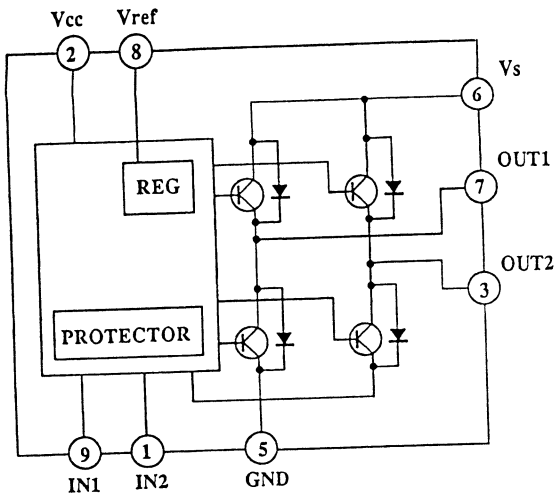


TC9184P (Electro Volume)



PIN NO.	SMBOL	DESCRIPTION
1	VSS	Analog power supply terminal.
16	VDD	Analog power supply terminal.
2,15	BASS +	Volume terminal
3,14	BASS -	
5,12	TREBLE+	
6,11	TREBLE-	
4,3	COM	Digital ground
7	GND	
8	CK	clock input terminal
9	DATA	Data input terminal
10	STB	Strobe input

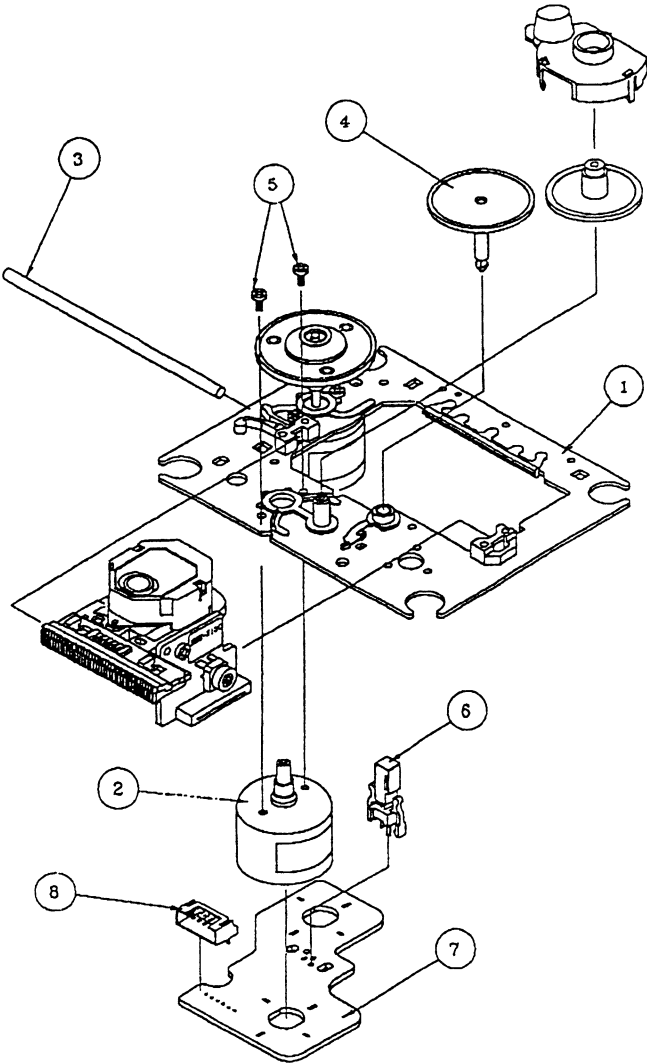
TA7291S (Volume Driver)



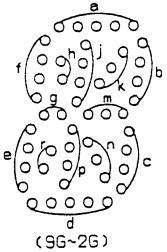
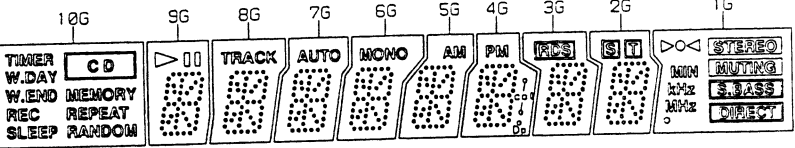
INPUT		OUTPUT		
IN1	IN2	OUT1	OUT2	MODE
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

CCW: Counter clockwise direction
CW: Clockwise direction

CD DRIVE EXPLODED VIEW / PARTS LIST (KSM-213CCM)



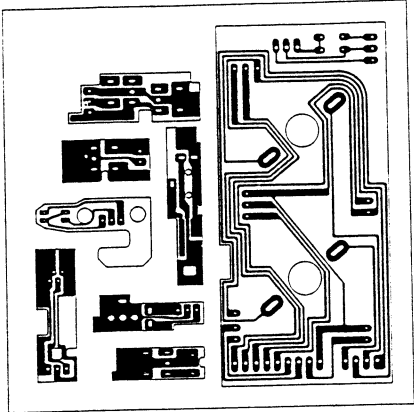
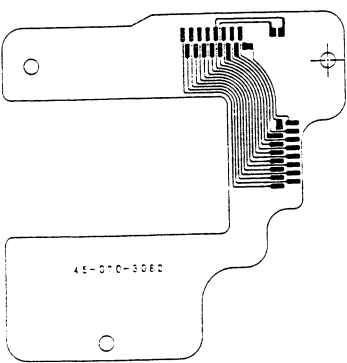
10-BT-167GK (FL Tube)



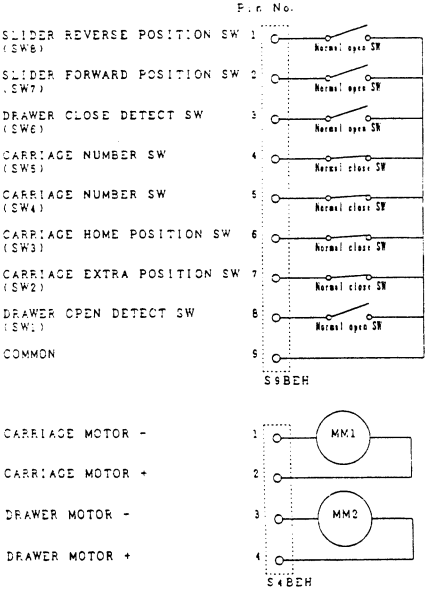
	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	—	a	a	a	a	a	a	a	a	—
P2	W.DAY	j	j	j	j	j	j	j	j	MUTING
P3	W.END	h	h	h	h	h	h	h	h	MIN
P4	MEMORY	k	k	k	k	k	k	k	k	S.BASS
P5	—	b	b	b	b	b	b	b	b	—
P6	—	f	f	f	f	f	f	f	f	—
P7	—	g	g	g	g	g	g	g	g	—
P8	REC	m	m	m	m	m	m	m	m	MHz
P9	—	c	c	c	c	c	c	c	c	—
P10	—	e	e	e	e	e	e	e	e	—
P11	REPEAT	n	n	n	n	n	n	n	n	kHz
P12	RANDOM	r	r	r	r	r	r	r	r	DIRECT
P13	—	p	p	p	p	p	p	p	p	—
P14	—	d	d	d	d	d	d	d	d	—
P15	TIMER	▷	TRACK	AUTO	MONO	AM	PM	RDS	S	▷ ○ ◁
P16	CD	□ □	—	—	—	—	Col	—	T	STEREO
P17	SLEEP	—	—	—	—	—	Dp	—	—	○

REF.NO.	DESCRIPTION	PART NO.
1	Motor chassis ass'y (MB)	X2625-877-1
2	Motor gear ass'y	X2625-769-1
3	Sled shaft	2626-908-01
4	Gear (A)(S)	2626-907-01
5	Screw +P2x3	7621-255-15
6	Leaf switch	1572-085-11
7	Motor (6P) (S) PCB	1639-678-12
8	Connector pin 6P	1564-722-11

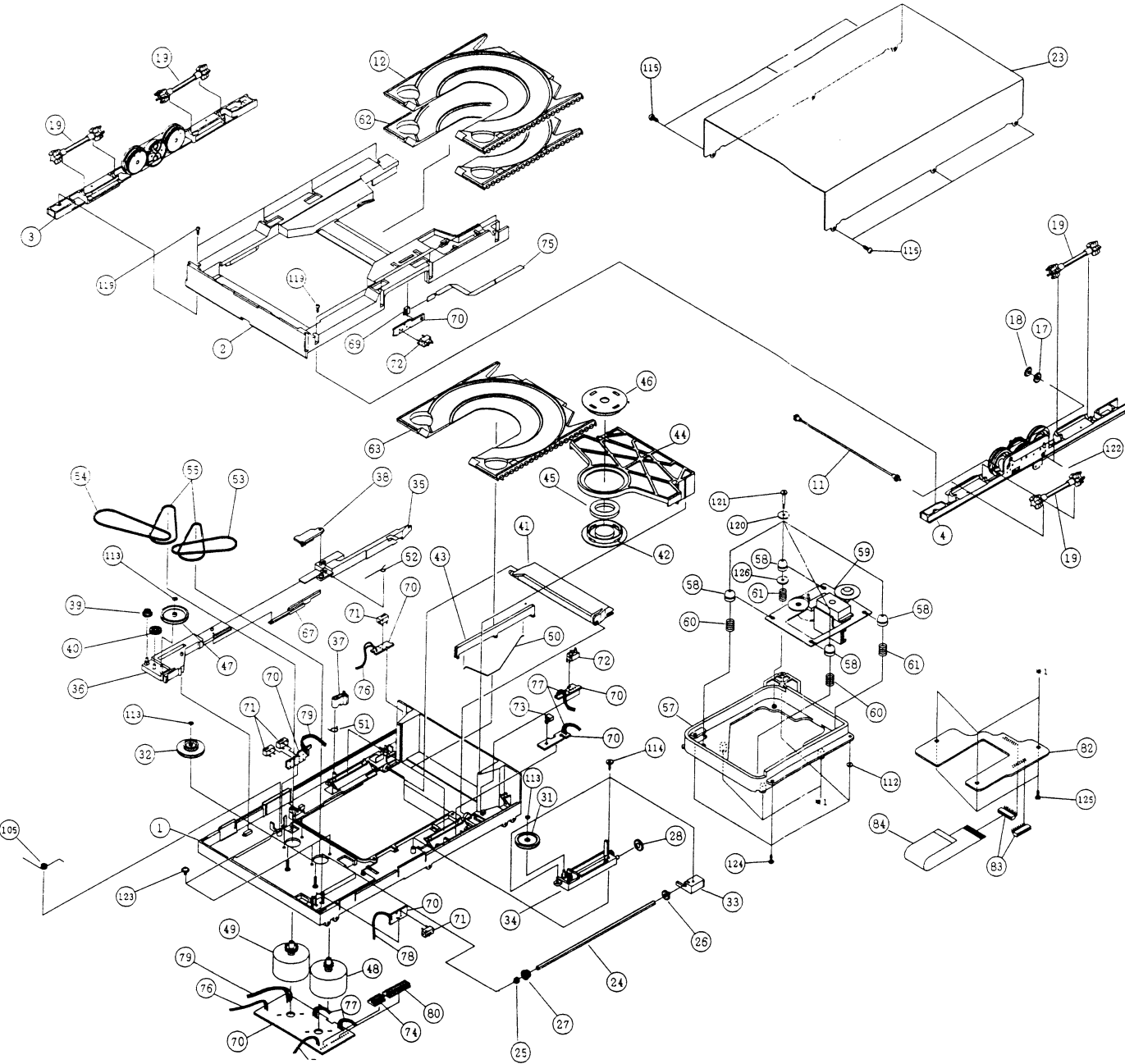
CD MECHANISM PC BOARD



SCHEMATIC DIAGRAM



CD MECHANISM EXPLODED VIEW



REF. NO.	DESCRIPTION	PART NO.
1	CHASSIS AS	45-093-4113
2	DRAWER	45-264-2004
3	HOLDER L AS	45-093-4088
4	HOLDER R AS	45-093-4086
11	GEAR DRIVE AS	45-093-4075
12	CARRIAGE 10	45-264-1109
17	GEAR IDLER 2	45-222-4022
18	BEVEL GEAR 2	45-222-4060
19	START GEAR AS	45-093-4084
23	COVER	45-112-2001
24	SHAFT	45-300-4018
25	CAP	45-262-4019
26	GEAR SPLINE	45-222-4021
27	BEVEL GEAR 1	45-222-4059
28	GEAR IDLER 1	45-222-4026
31	PULLEY C	45-222-4058
32	PULLEY B	45-229-4053
33	HOLDER 2	45-219-4062
34	HOLDER 1 AS	45-093-4076
35	SLIDER 1	45-259-2031
36	SLIDER 2 AS	45-093-4091
37	ARM STOPPER A	45-239-4064
38	ARM STOPPER B	45-239-4065
39	GEAR IDLER A	45-222-4049
40	GEAR IDLER C	45-222-4051
41	LEVER	45-259-3008
42	CLAMPER A	45-229-3024
43	LIFTER	45-259-3025
44	ARM	45-239-1037
45	MAGNET	36-067-4928
46	CLAMPER B	45-229-3069
47	PULLEY A	45-229-4052
48	MOTOR CRG AS	45-093-4092
49	MOTOR DRW AS	45-093-4093
50	SPRING	01-000-4541
51	SPRING	01-082-4558
52	SPRING	01-082-4559
53	BELT	02-083-4151
54	BELT	02-083-4157
55	BELT	02-083-4152
57	FRAME	45-211-3072
58	RUBBER CUSHION SO	45-063-4072
59	PICK-UP DRIVE	KSM213CCM
60	SPRING	01-081-4561
61	SPRING	01-081-4562
62	CARRIAGE 20	45-264-1110
63	CARRIAGE 30	45-264-1111
67	PLATE E	45-219-4107
69	CONNECTOR	04FM-1.0ST
70	PC BOARD (BODY)	45-070-3074
71	SWITCH	MPU10101MMB0
72	SWITCH	MPU20273BLB0
73	CONNECTOR	04FM-1.0SP
74	CONNECTOR	S4BEH
75	CARD WIRE	45-072-4077
80	CONNECTOR	S9BEH
82	PCB (BODY)	45-070-3082
83	CONNECTOR	16FMNSTRK
84	CARD WIRE	45-072-4083
105	SPRING	01-082-4577
112	WASHER	GWP23X055025
113	WASHER	GWP15X045025S
114	SCREW	GST20A2010
115	SCREW	GST20A2606
120	WASHER	GST10B2006
121	SCREW	GSN31X120050
122	SCREW	03-300-4366
123	SCREW	GSD30A2005
124	SCREW	GSP14A2604
125	SCREW	GST20A2610
126	WASHER	GST20A2006
		03-000-4427

ADJUSTMENT PROCEDURES

Preparation

1. Input

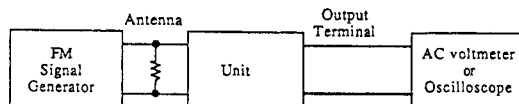
FM mono: 1kHz, 75kHz devi., 60dB/μV
FM stereo: 1kHz, 67.5kHz devi., 60dB/μV
Pilot signal 19kHz 7.5kHz devi.

2. Outputs

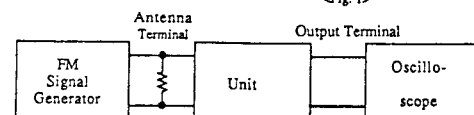
Connect the non-inductive type resistor of 8 ohms to the all speaker terminals unless otherwise noted.

FM ADJUSTMENT

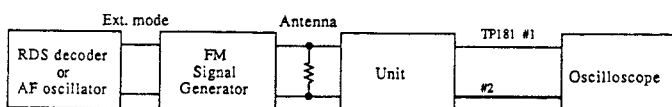
Item	Connection of instrument	FM SG output	Stereo modulator output	Tuning frequency	Output indicator	Adjustment point	Adjust for	Remarks
FM RF	Fig.1	99.0MHz 1kHz 75kHz devi. 65dB(60dB)	—	99.0MHz	AC voltmeter	IFT on the front end	Maximum	FM MUTE/MODE switch: MONO
Muting Level	Fig.2	99.0MHz 19.2dB(14dB)	—	99.0MHz	Oscilloscope	R101	Signal output	FM MUTE/MODE switch: AUTO
RDS	Fig.3	99.0MHz Ext. mod. 60dB	RDS data or 57kHz 3% devi.	99.0MHz	Oscilloscope	R181	Maximum	



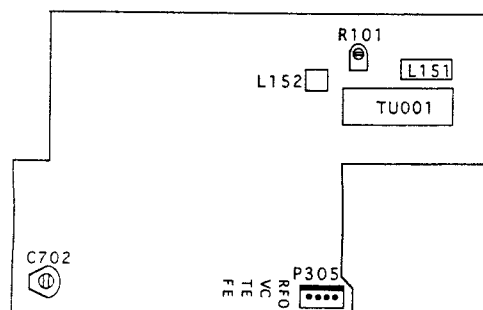
<Fig. 1>



<Fig. 2>



<Fig. 3>



TEST POINTS

ADJUSTMENT PROCEDURES

Confirmation of Jitter

1. Connect the jitter meter to pin 3(VC) and pin 4 (RFO) of test point (P305).
2. Load the test disc (SONY TYPE-4) on the tray and play the track 2.
3. Confirm the jitter value is less than 10.5nsec.

Automatic Adjustment

1. Press and hold the DOWN button, then press the DISC-2 (OPEN/CLOSE) button.
2. Insert disc-1 (YEDS-18) and press >play button.
3. Connect the oscilloscope to pin 3(VC) and pin 2 (TE) of test point (P305).
4. Press paly button.
5. Confirm that the center of tracking error singal on the oscilloscope becomes GND level.

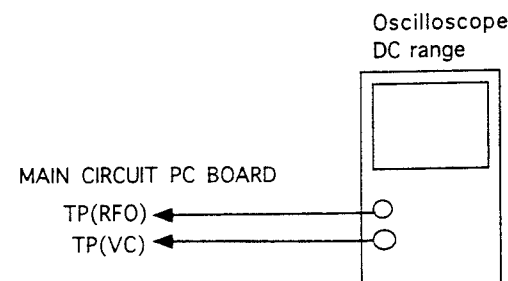
Clock Frequency Adjustment

1. Connect the frequency counter to P701.
2. Press and hold the DOWN button, then press the DISC-3 (OPEN/CLOSE) button.
3. Adjust trimmer (C702) so that the frequency counter becomes 524.288kHz±1Hz.

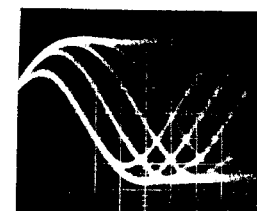
Confirmation of RF level

It is not necessary to perform the adjustment of optical pickup. This confirmation should be made when replacing the optical pickup.

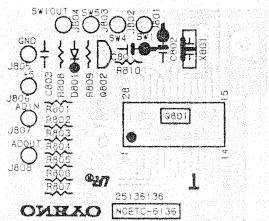
- 1). Connect the oscilloscope to test points RFO and VC.



- 2). Turn the power switch on.
- 3). Load the test disc YEDS-18 on the tray and press the play button.
- 4). Confirm that the waveform on the oscilloscope is optimum eye pattern and optimum level as shown photo 1.
Optimum eye pattern means that shape "◇" can be clearly distinguished at the center of the waveform.

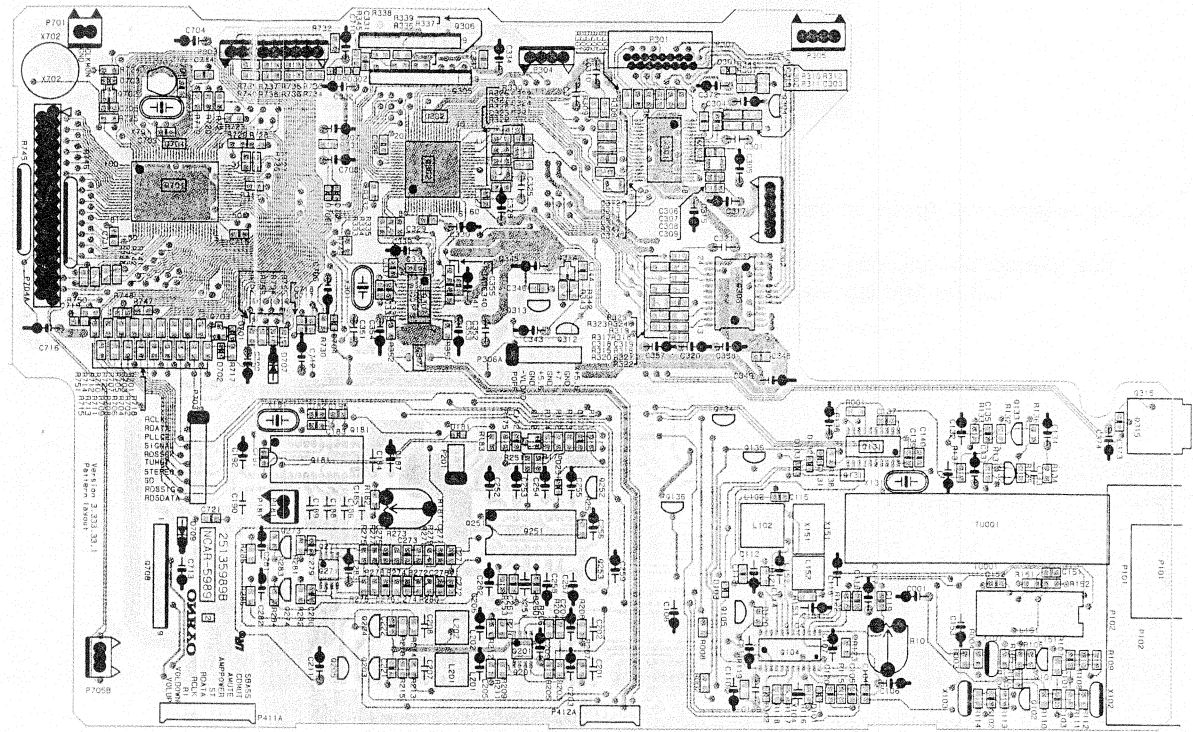
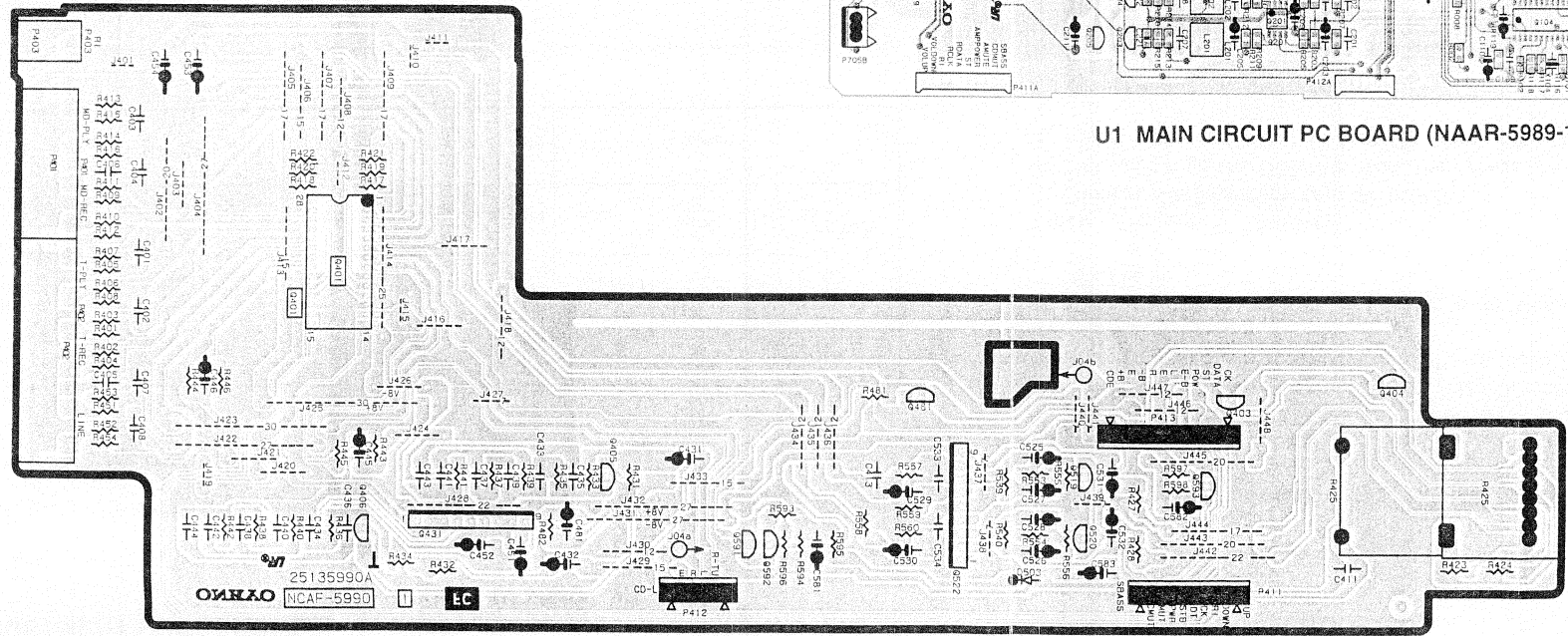


PRINTED CIRCUIT BOARD BOTTOM VIEW



U8 MICON CIRCUIT PC BOARD
(NAETC-6136)

U2 PRE-AMP CIRCUIT PC BOARD (NAAF-5990-1B/1C)

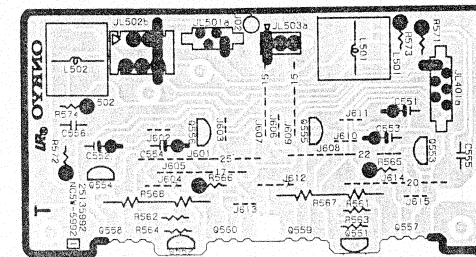
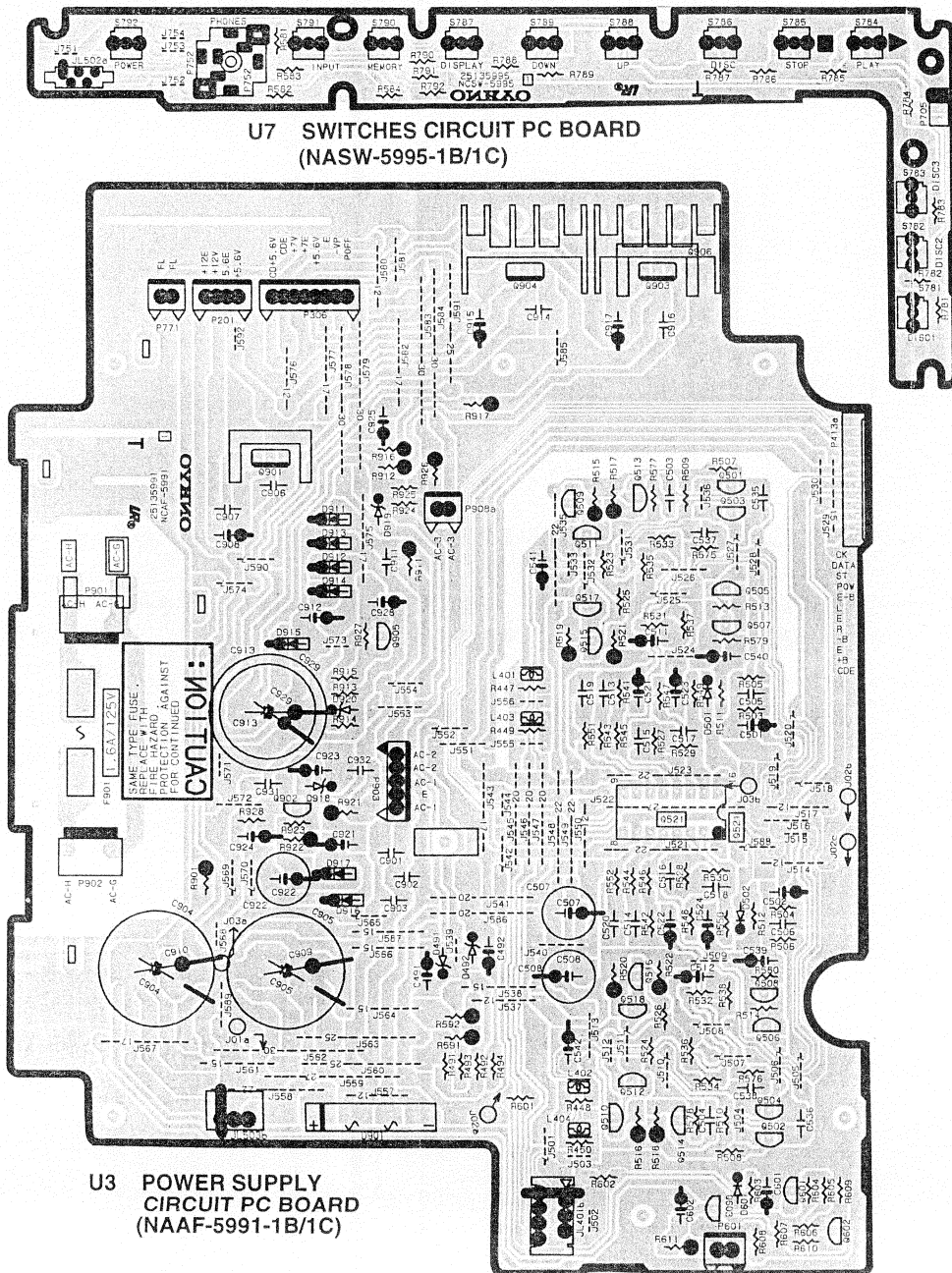


U1 MAIN CIRCUIT PC BOARD (NAAR-5989-1B)

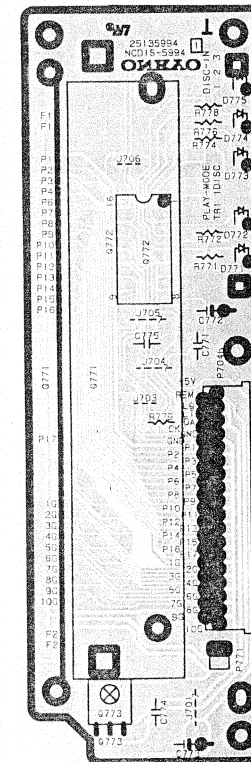


U5 SPEAKER TERMINAL
PC BOARD
(NADIS-5994-1B/1C)

PRINTED CIRCUIT BOARD BOTTOM VIEW

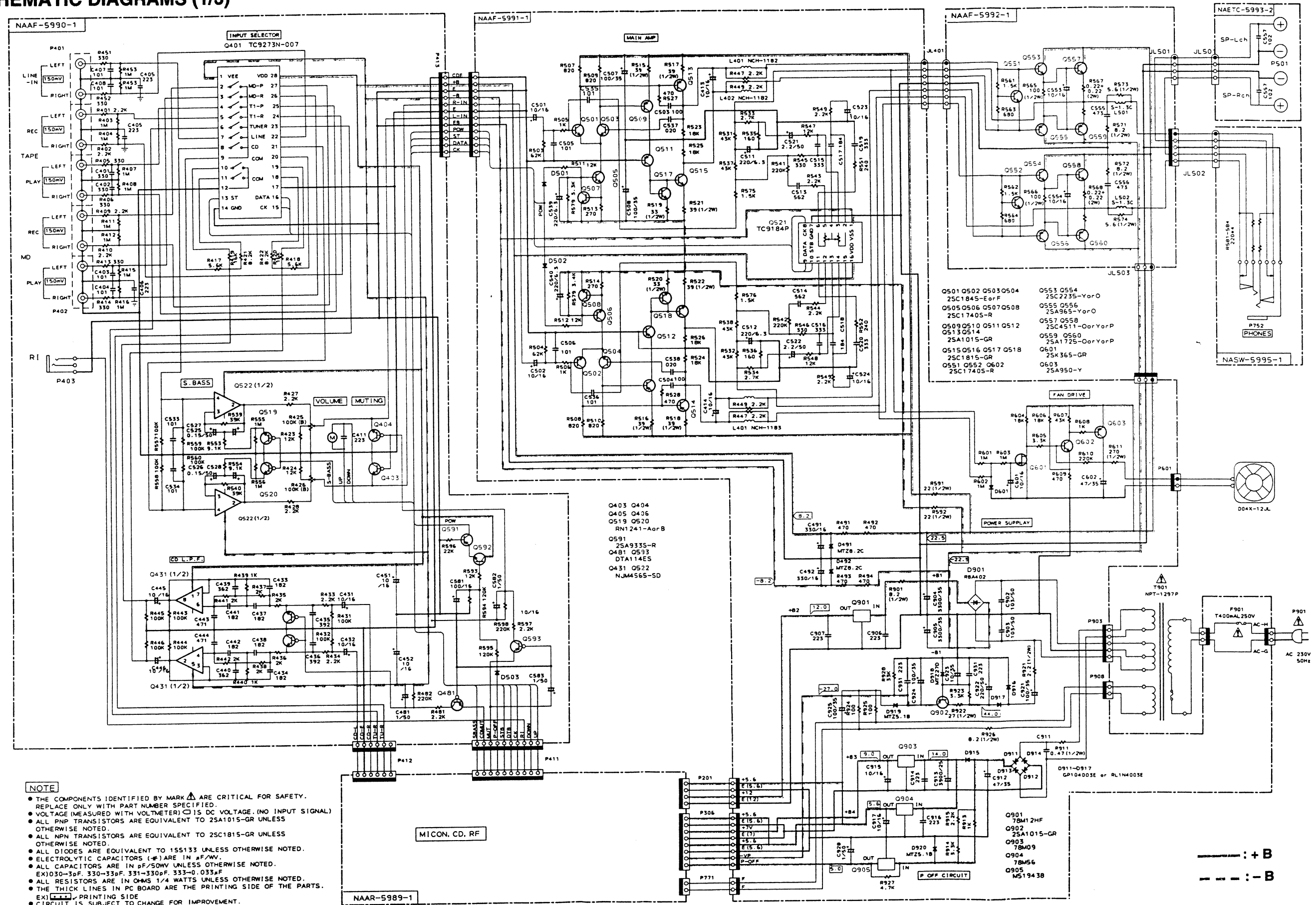


U4 MAIN AMP CIRCUIT PC BOARD
(NAAF-5992-1B/1C)



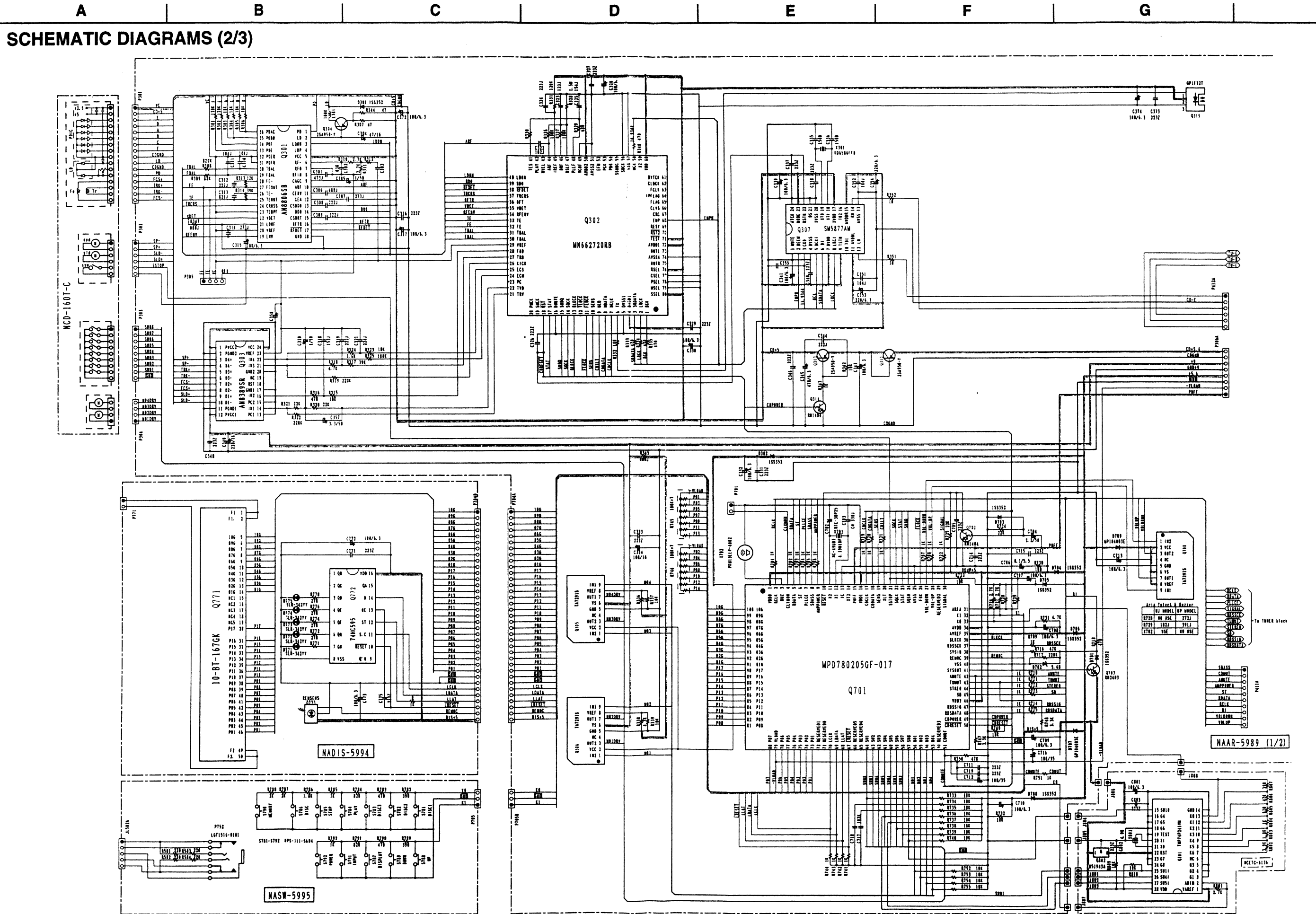
U6 DISPLAY CIRCUIT PC BOARD
(NADIS-5994-1B/1C)

SCHEMATIC DIAGRAMS (1/3)

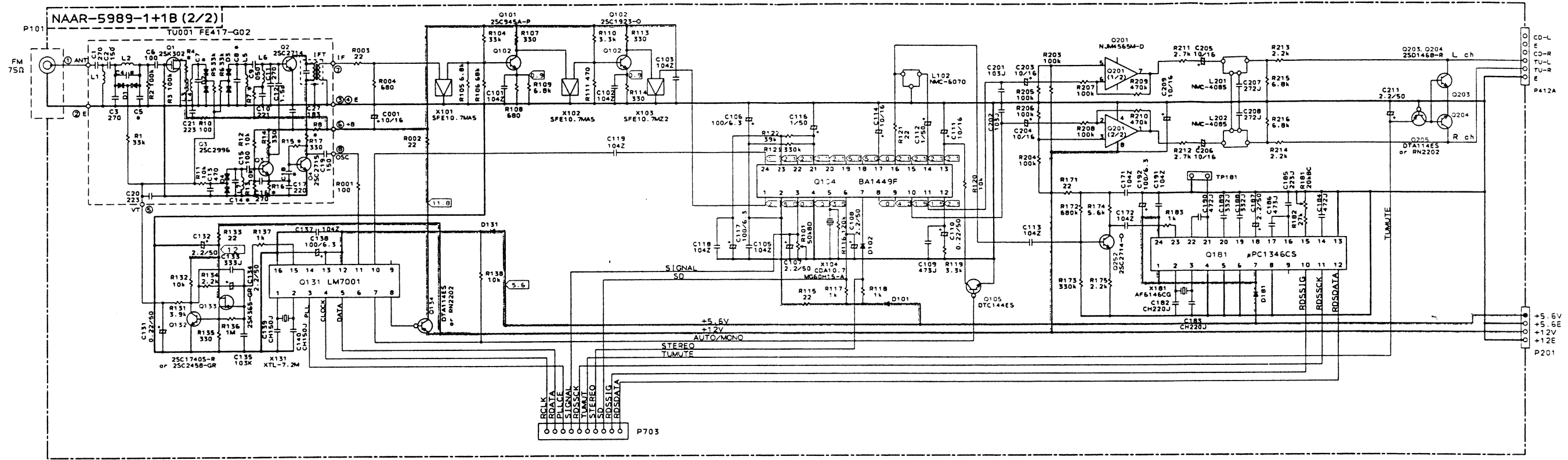


NOTE

- THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) $\square$ IS DC VOLTAGE (NO INPUT SIGNAL).
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (E) ARE IN μ F/V.
- ALL CAPACITORS ARE IN pF/50V UNLESS OTHERWISE NOTED.
- EX) 0.030-30pF, 330-33pF, 331-33pF, 333-0.033pF.
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
- EX) $\square$ PRINTING SIDE.
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.



SCHEMATIC DIAGRAMS (3/3)



PRINTED CIRCUIT BOARD PARTS LIST

U1 MAIN CIRCUIT PC BOARD (NAAR-5989-1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q104	22241089R2	BA1449F
Q131	22241088R2	LM7001JM
Q181	22240679	MPC1346CS <P>
Q201	22240581R2	NJM4565M
Q301	22240924R2	AN8806SB-E1
Q302	22240925R3	MN662720RB
Q303	22240927R2	AN8389SR-E1
Q305,Q306,Q708	22240239	TA7291S
Q307	22241074R2	SM5877AM-ET
Q701	22241086R3	MPD780206GF-017
Transistors		
Q101	2210746	2SC945A-P <P>
Q102	2211723	2SC1923-O
Q105	221282	DTC144ES
Q132	2213284 or 2212115	2SC1740S-R or 2SC2458-GR
Q133	2212445	2SK365-GR
Q134,Q205	2213510 or 2214350	DTA114ES or RN2202
Q172	2214603R2	2SC2714-O
Q203,Q204	2212794	2SD1468-R
Q304,Q312,Q313	2211504	2SA950-Y
Q314,Q702,Q703	2214490R2	RN1404
Optical module		
Q315	24120038	GP1F32T
Diodes		
D101,D102,D131	223234R2	1SS352
D181	223234R2	1SS352 <P>
D301,D302,D701,D703-706,D708	223234R2	1SS352
D702	224490560R2	UDZ5.6B, Zener
D707,D709	22380035	GP104003E
Coils		
L102	233383	NMC-6070 <P>
L201,L202	233484	NMC-4085
L301	231237K100R2	NCH-1475
Ceramic Filter		
X101	3010071	SFE10.7MA5, (RED)
X103	3010130	SFE10.7MZ2A
Resonators		
X131	3010141 or 3010260	XTL-7.2M or HC-49/U03, 7.2M, Crystal
X181	3010203	AF6146CG, Crystal <P>
X301	3010112	KD6586FFB, Crystal
X701	3010261	HC-49/U03, 4.19M10P, Crystal
Capacitors		
C001,C111,C203-C206	393341007	10 μ F, 16V, Elect.
C106	393321017	10 μ F, 16, Elect.
C107,C108,C132	354780229	100 μ F, 6.3V, Elect.
C109,C186	374724734	2.2 μ F, 50V, Elect.
C110,C131	354782299	0.047 μ F $\pm$ 5%, 50V Plastic
C112	393380107	0.22 μ F, 50V, Elect.
C114	354741009	1 μ F, 50V, Elect.
C116	354780109	10 μ F, 16V, Elect. <P>
C117,C192	354721019	1 μ F, 50V, Elect.
C133	374723334	100 μ F, 6.3V, Elect.
C134,C211	354780229	0.033 μ F $\pm$ 5%, 50V Plastic
C138	353721019	2.2 μ F, 50V, Elect.
C184,C190	374724724	100 μ F, 6.3V, Elect.
C185	374722234	4700pF $\pm$ 5%, 50V Plastic <P>
C187	354780229	0.022 μ F $\pm$ 5%, 50V Plastic <P>
C188,C189	374723324	2.2 μ F, 50V, Elect. <P>
C201,C202	374721034	3300pF $\pm$ 5%, 50V Plastic <P>
C207,C208	374722724	0.01 μ F $\pm$ 5%, 50V Plastic
C209	393344707	2700pF $\pm$ 5%, 50V Plastic
C301	374724734	47 μ F, 16V, Elect.
		0.047 μ F $\pm$ 5%, 50V Plastic

CIRCUIT NO.	PART NO.	DESCRIPTION
C304	393344707	47 μ F, 16V, Elect.
C305,C320	393380107	1 μ F, 50V, Elect.
C310,C311,C351,C352	374721044	0.1 μ F $\pm$ 5%, 50V Plastic
C315,C317,C341,C343,C372,C374	393321017	100 μ F, 6.3V, Elect.
C321	374722244	100 μ F, 6.3V, Elect.
C325	374723344	0.22 μ F $\pm$ 5%, 50V Plastic
C328,C330,C332,C339	355721019	0.33 μ F $\pm$ 5%, 50V Plastic
C334	355744709	100 μ F, 6.3V, Elect.
C345	393324717	47 μ F, 16V, Elect.
C349	393342217	470 μ F, 6.3V, Elect.
C353,C354	393322217	220 μ F, 16V, Elect.
C357	393380337	220 μ F, 6.3V, Elect.
C702	3060029	3.3 μ F, 50V, Elect.
C704	355780229	NTC-30P25, Trim
C706	3000076	2.2 μ F, 50V, Elect.
C707-C709	393321017	EECS5R5T104, EDL C
C710	355721019	100 μ F, 6.3V, Elect.
C712,C713,C716	393361017	100 μ F, 35V, Elect.
Resistors		
R101	5215046	N08HR, 50KBC, Trimer
R181	5215003	N08HR, 20KBC, Trimer <P>
Terminal		
P101	25060231	NTM-1PD153 <P>
Plugs		
P181	25055691	NPLG-2P647 <P>
P302	25055370	NPLG-6P353
P303	25055240	NPLG-9P224
P304	25055235	NPLG-4P219
P305	25055045	NPLG-4P33
P701	25055038	NPLG-2P29
P705B	25055367	NPLG-3P350
Sockets AS		
P201	2002390815	NSAS-8P0309
P306A	2002391615	NSAS-16P0194
Sockets		
P301	25051796	NSCT-16P1583
P411A	25051235	NSCT-10P1025
P412A	25051231	NSCT-6P1021
P704A	25050975 or 25050865	NSCT-35P762 or NSCT-35P660
Front end		
TU001	240102	FE417-G02
Shield plate		
	27150387	TU001 (FM)

U2 PRE-AMP CIRCUIT PC BOARD (NAAF-5990-1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q401	22241072	TC9273N-007
Q431,Q522	22240273	NJM4565S-D
Transistors		
Q403-Q406,Q519,Q520	2213631 or 2213632	RN1241-A or RN1241-B
Q481,Q593	2213510	DTA114ES
Q591	2213354	2SA933S-R
Q592	2213284	2SC1740S-R
Diodes		
D503,D601	223205 or 223163	1SS270A or 1SS133
Capacitors		
C431,C432	393341007	10 μ F, 16V, Elect.
C433,C434,C437,C438,C441,C442	374721824	1800pF $\pm$ 5%, 50V Plastic
C435,C436	374723924	3900pF $\pm$ 5%, 50V Plastic
C439,C440	374723624	3600pF $\pm$ 5%, 50V Plastic
C443,C444	374724714	470pF $\pm$ 5%, 50V Plastic

CIRCUIT NO.	PART NO.	DESCRIPTION
C445,C446,C451-C454	393341007	10 μ F, 16V, Elect.
C481	393380107	1 μ F, 50V, Elect.
C581	355721019	100 μ F, 6.3V, Elect.
C582,C583	393380107	1 μ F, 50V, Elect.
Resistor		
R425	5104338	100KBT25F, Volume
Plugs		
P411	25055706	NPLG-10P662
P412	25055702	NPLG-6P658
P413	25055708	NPLG-12P664
Jacks		
P403	25045504	NPJ-1PDBL319
P401	25045300 or 25045458	NPJ-6PDBL159 or <P> NPJ-6PDBL279
P402	25045303 or 25045460	NPJ-4PDBL162 or <P> NPJ-4PDBL280
Socket		
P413a	25051237	NSCT-12P1027

U3 POWER SUPPLY CIRCUIT PC BOARD (NAAF-5991-1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q521	22240605	TC9184P
Q901	222780125NEC	78M12HF
Q903	222780095JRC	NJM78M09
Q904	222780565JRC	78M56
Q905	222951	M51943B
Transistors		
Q501-Q504	2211733	2SC1845-E
Q505-Q508,Q602	2213284	2SC1740S-R
Q509-Q514,Q902	2211455	2SA1015-GR
Q515-Q518	2211255	2SC1815-GR
Q601	2212445	2SK365-GR
Q603	2211504	2SA950-Y
Diodes		
D491,D492	224470823	MTZJ8.2C, Zener
D501,D502	223205 or 223163	1SS270A or 1SS133
D901	22380048	Δ RBA-402
D911-D917	22380035 or 22380032	Δ GP104003E or 1SR139-100
D918	224452704	MTZJ27D, Zener
D919,D920	224470512	MTZJ5.1B, Zener
Coils		
L401-L404	231126	NCH-1182
Capacitors		
C491,C492	393343317	330 μ F, 16V, Elect.
C501,C502	393341007	10 μ F, 16V, Elect.
C507,C508	393361017	100 μ F, 35V, Elect.
C511,C512	393322217	220 μ F, 6.3V, Elect.
C513,C514	374725624	5600pF $\pm$ 5%, 50V Plastic
C515,C516,C519,C520	374723334	0.033 μ F $\pm$ 5%, 50V Plastic
C517,C518	374721844	0.18 μ F $\pm$ 5%, 50V Plastic
C521,C522	393380227	2.2 μ F, 50V, Elect.
C523,C524	393341007	10 μ F, 16V, Elect.
C525-C528	354781599	0.15 μ F, 50V, Elect.
C539,C540	393322217	220 μ F, 6.3V, Elect.
C541-C552	393341007	10 μ F, 16V, Elect.
C601	354781009	10 μ F, 50V, Elect.
C602	354764709	47 μ F, 35V, Elect.
C902,C903	374721044	0.1 μ F $\pm$ 5%, 50V Plastic
C904,C905	3504301	3300 μ F, 35V, Elect.
C911	374721034	0.01 μ F $\pm$ 5%, 50V Plastic
C912	354764709	47 μ F, 35V, Elect.
C913	3504307	4700 μ F, 25V, Elect.
C915,C917	393341007	10 μ F, 16V, Elect.
C921,C924,C925	393361017	100 μ F, 35V, Elect.
C922	354782219	220 μ F, 50V, Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
C923	393361007	10 μ F, 35V, Elect.
C928	393380107	1 μ F, 50V, Elect.
Resistors		
R515-R518,R521,R522	443523904	39 ohm $\pm$ 5%, 1/2W, Metal oxid
R519,R520	443523304	33 ohm $\pm$ 5%, 1/2W, Metal oxid
R591,R592	443522204	22 ohm $\pm$ 5%, 1/2W, Metal oxid
R611	443522714	270 ohm $\pm$ 5%, 1/2W, Metal oxid
R901,R926	453530824	8.2 ohm $\pm$ 5%, 1/2W, Metal
R911	453534794	0.47 ohm $\pm$ 5%, 1/2W, Metal <P>
R921	453530224	2.2 ohm $\pm$ 5%, 1/2W, Metal
R922	443522704	27 ohm $\pm$ 5%, 1/2W, Metal oxid
Plugs		
P201a	25055148	NPLG-4P132
P306a	25055152	NPLG-8P136
P601a	25055099	NPLG-2P83
P901a	25055676	NPLG-2P632
P902a	25055675	NPLG-2P631
P903a	25055135	NPLG-5P119
P908a	25055146	NPLG-2P130
Fuse holder		
F901a	25050065	YSH403T
Radiators		
	27160145 or 27160145-1	RAD-51, Q903
	27160176	RAD-56, Q904

U4 MAIN AMP CIRCUIT PC BOARD (NAAF-5992-1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
Transistors		
Q551,Q552	2213284	2SC1740S-R
Q553,Q554	2211654 or 2211653	2SC2235-Y or 2SC2235-O
Q555,Q556	2211644 or 2211643	2SA965-Y or 2SA965-O
Coils		
L501,L502	231176S or 231176SY	S-1.3C <P>
Capacitors		
C553,C554	393341007	10 μ F, 16V, Elect.
C555,C556	374724734	0.047 μ F $\pm$ 5%, 50V Plastic
Resistors		
R565,R566	443521014	100 ohm $\pm$ 5%, 1/2W, Metal oxid
R567,R568	4500027	0.22 ohm $\pm$ 10%, 2W, Metal plate
R571,R572	453530824	8.2 ohm $\pm$ 5%, 1/2W, Metal
R573,R574	453530564	5.6 ohm $\pm$ 5%, 1/2W, Metal <P>

U5 SPEAKER TERMINAL PC BOARD (NAETC-A5993-1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
Terminal		
P501	25060245	NTM-4PDML165

U6 DISPLAY CIRCUIT PC BOARD (NADIS-5994-1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q771	222745955	74HC595P
	FL tube	
Q751	212141	10-BT-167GK
	Remote sensor	
Q752	24130011	PIC-12043TE2
	Diodes	
D771-D775	225320	SLR-342YY, LED
	Capacitors	
C772,C773	353721019	100 μ F, 6.3V, Elect.
	Sockets	
P704a	25050941 or 25050897	NSCT-35P728 or NSCT-35P692

CIRCUIT NO.	PART NO.	DESCRIPTION
P771	Socket AS 2002390415	NSAS-4P0191
P771a	Plug 25055146	NPLG-2P130
E701	Holders 27190943	(FL)
E771	27190998	(LED)

U7 SWICHES CIRCUIT PC BOARD (NASW-5995-1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
S781-S792	Switches 25035652	NPS-111-S604
P705	Socket AS 2002320615	NSAS-6P0023
P752	Jack 25045396	LGT1516-0101

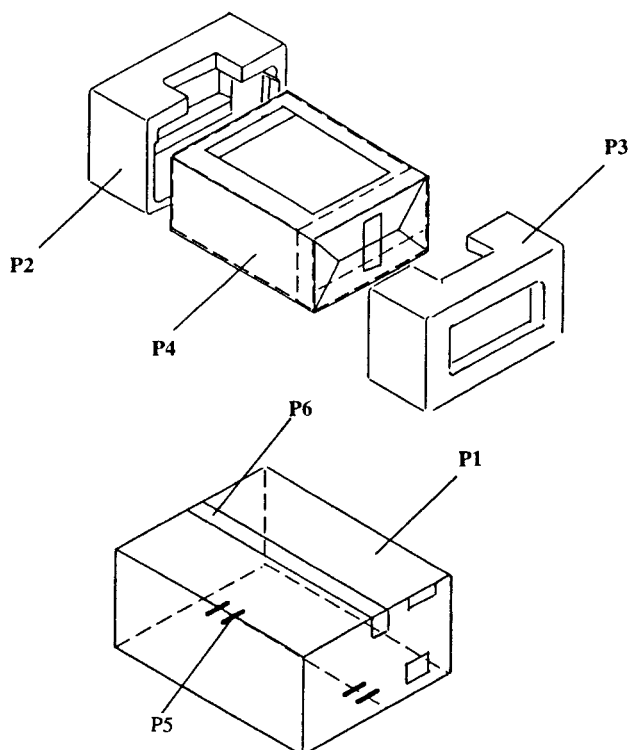
U8 MICON CIRCUIT PC BOARD (NAETC-6136)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q801	ICs 22241134	TMP47P241 VM
Q802	22240018	M51943A
X801	Ceramic lock 3010150	CST4.00MGW
C801	Capacitor 354721019	100 μ F, 6.3V, Elect.
	Holder 27190480	KGLS-8S

NOTE: <S> Silver model
 Black model
 <P> 230V model only
 <DT> Taiwanese model only
 <PT> Asian model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK
 Δ ARE CRITICAL FOR RISK OF FIRE AND
 ELECTRIC SHOCK. REPLACE ONLY WITH
 PART NUMBER SPECIFIED.

PACKING VIEW



PACKING VIEW PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
P1	29053141A	Carton box <S>
	29053142A	Carton box
P2,P3	29091771B	Pad AS
P4	29100123C	Poly bag, 550x430
P5	282321	Staple
P6	29110071	PP tape
	29100097-1AY	Poly bag, 320x250
	24140332B	RC-332S, Remote control
	3010054	UM-3, Battery
	292116	FM antenna
	29342418	Instruction manual, E
	29342419	Instruction manual, U3(FSI) <P>
	29342421	Instruction manual, T <PT,DT>
	29342420	Instruction manual, U3(GSwD) <P>
	25065462	YAE21-0237, FM adaptor <PT,DT>
	29360687	Label (CLASS 1)
	29355133A	Instruction sheet (DBP)
	29362036	Label (EX)
	29362021	Label <PT,DT>
	25065462	FM Adaptor, YAE21-0237 <PT>

NOTE: <S> Silver model
 Black model
 <P> 230V model only
 <DT> Taiwanese model only
 <PT> Asian model only

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